PRELIMINARY ASSESSMENT

METLAKATLA PENINSULA

Prepared for

Metlakatla Indian Community

Prepared by

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Seattle, Washington

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1.0 SUMMARY

The Metlakatla Indian Community requested that Ridolfi Engineers and Associates, Inc. perform a Preliminary Assessment of the Metlakatla Peninsula. The Preliminary Assessment is an initial step in identifying the environmental concerns in the project area in order to determine if the releases or potential releases of hazardous substances and petroleum products at the site pose a risk to human health and the environment.

The CERCLA Site Assessment phase includes a Preliminary Assessment to gather existing information about a hazardous waste site. The objective of the Preliminary Assessment is to determine if major threats exist and if cleanup may be needed. A site inspection is performed if the Preliminary Assessment determines that hazardous substances may pose a threat to human health or the environment.

The Preliminary Assessment (PA) study included four major components: review of available records, field reconnaissance of the site, interviews with persons knowledgeable about the site history and operations, and report preparation. The results of this assessment indicate that contamination from releases or potential releases of hazardous substances and petroleum may pose a threat to human health and the environment in and around the Metlakatla Peninsula. An inventory of over 80 locations at the project site was developed following research and field reconnaissance. Environmental concerns at these locations include underground and above-ground storage tanks, disposal areas, barrels, explosives, asbestos-containing materials, lead-based paint, and spills. Environmental contamination presents a risk to residents and workers at the site and to sensitive wetland and coastal environs.

Further actions are necessary in order to determine the extent and risk associated with the environmental concerns and to mitigate those which pose a threat to people and natural resources on the Metlakatla Peninsula. The information presented in this report will be used to develop a strategic plan for investigation and mitigation of environmental impacts at the site.

2.0 INTRODUCTION

2.1 PURPOSE

The purpose of this report is to document the environmental information resulting from a Preliminary Assessment of the Metlakatla Peninsula on Annette Island. A Preliminary Assessment was conducted on approximately 16.7 square miles (10,700 acres) of the Metlakatla Peninsula. The project site was previously used by the United States Department of Defense (DOD) and Royal Canadian armed forces as an airbase during World War II. After World War II, portions of the site were used and continue to be used by other government agencies and commercial entities.

The objectives of the Preliminary Assessment (PA) are to locate and identify areas of environmental concern resulting from actual, suspected, or potential releases of petroleum products or hazardous substances that are attributable to parties other than the Metlakatla Indian Community. The PA is an element of the Metlakatla Indian Community's Phase I Environmental Mitigation Project.

2.2 METHODOLOGY

The PA was conducted in accordance with suggested practices outlined in American Society for Testing and Materials (ASTM) document E 1527, Standard *Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, and procedures for conducting Preliminary Assessments outlined in United States Environmental Protection Agency publication 9345.0-01A, *Guidance for Performing Preliminary Assessments Under CERCLA*, as appropriate. The major components of the assessment are: records review, site reconnaissance, interviews, and report preparation.

The records review focused on researching and analyzing readily available information concerning the project area and its surroundings in order to understand historical site utilization and identify potential areas of concern. This included the following activities: review of published information concerning the site's physical characteristics and natural resources; review of environmental regulatory information and other federal agency files pertaining to the environmental conditions at the site; and review of information from library archives, historical and contemporary aerial photographs, relevant maps and drawings, and environmental reports.

The site reconnaissance consisted of a physical inspection of the site to corroborate research information, confirm current conditions at the site, and to collect additional information to support the assessment. The site reconnaissance was conducted in accordance with a site-specific Health and Safety Plan developed for the project. Areas of environmental concern were located, inspected, and photographed. Existing conditions at the site were assessed and the presence of petroleum products or hazardous substances was noted.

The interviews consisted of face-to-face and phone conversations with persons knowledgeable of the site history and/or operations. Knowledgeable persons included individuals that worked on the construction of the airbase, that were employed by federal agencies or commercial entities which operated at the site, or who otherwise have personal knowledge regarding the environmental conditions on the site.

The report preparation consisted of evaluating the data generated from the records review, site reconnaissance, interviews, and compilation of the resulting information related to the environmental conditions at the site.

2.3 SPECIAL CONDITIONS AND EXCEPTIONS OF ASSESSMENT

Special conditions and exceptions of the PA are as follows:

- Typical municipal research sources such as land title records, building records, and property descriptions do not exist because the Metlakatla Indian Community does not recognize conventional property transactions.
- Annette Island is a relatively remote and unique island and the Metlakatla Indian Community is a sovereign government. Numerous historical documents and reports concerning the conditions of the site are on file with the U.S. Environmental Protection Agency and other federal agencies. For these reasons, it was deemed unnecessary to perform a commercial database search of state/federal agency files typically performed in association with an ASTM Phase I Environmental Site Assessment.
- Only records which were readily available have been reviewed. Other Federal records, such as those in the custody and control of Department of Defense agencies, have not been reviewed for this assessment.

- Hazardous materials inspections of existing buildings and structures were primarily focused on those used previously for storage of hazardous substances or those which were constructed with suspected lead-based paint or asbestos-containing materials.
- Information contained in reports authored by other environmental consulting firms referenced in this PA is assumed to be accurate and therefore valid.
- The watersheds which historically served as water supply sources for the airbase were not included in this Preliminary Assessment, except for a portion of Yellow Hill.

Section 3 of this report presents background information about the project site and describes infrastructure and improvements which have been constructed. The historical and current uses of the site are also presented in Section 3. Section 4 of this report contains a bibliographic listing of the information considered during the records review for the PA. The information gathered as a result of the site reconnaissance and interviews is summarized in Section 5. Cleanup actions recently proposed or implemented at the project site are summarized in Section 6. The findings of the PA are summarized in Section 7. Section 8 of the report presents the professional qualifications of the personnel who performed the assessment.

3.0 SITE DESCRIPTION

3.1 LOCATION AND LEGAL DESCRIPTION

Annette Island is an approximately 200 square mile island located in the southern-most portion of the Alexander Archipelago in southeast Alaska. The island is located approximately 900 miles southeast of Anchorage, Alaska and 700 miles northwest of Seattle, Washington. As shown in Figure 1, Ketchikan, Alaska is approximately 20 miles northeast of the island. Prince Rupert, British Columbia, Canada is located approximately 60 miles to the southeast (USGS, 1976).

The Metlakatla Peninsula is an area approximately 8 miles long and 3 miles wide and is located on the southwest side of Annette Island. As shown in Figure 2, the peninsula is bordered by the salt-water bodies of: Tamgas Harbor on the east, Felice Strait on the south, Clarence Strait to the west and Port Chester on the north. The Town of Metlakatla, with a population of approximately 1,500-1,600 people, is located on the northern tip of the peninsula. The hangar and landing field associated with the former airbase is located approximately 6 miles south of Metlakatla at a latitude of 55° 02′ north and longitude of 131° 34′ west (NOAA, 1989).

The Metlakatla Peninsula PA project site, including the Annette Island airbase, is an area of about 16.7 square miles (10,700 acres) which is located on the southern portion of the island. The legal description for the project site encompasses all or portions of:

Township 78 South, Range 92 East: Sections 20, 21, 28-34;
Township 79 South, Range 91 East: Sections 12 and 13;
Township 79 South, Range 92 East: Sections 3-10, and 16-20;

of the Copper River meridian. In addition to this area, the southern portion of Section 16 and 17 of Township 78 South, Range 92 are within the project site.

The size of the DOD Annette Island airbase totaled 12,783 acres. This area included two watersheds, the 740.5-acre Yellow Lake basin on the Metlakatla Peninsula, and the 1,314.5-acre Lake Nold basin on the eastern portion of Annette Island (Sverdrup, 1986). The two watershed basins were not included in the project site except for a small area comprising the DOD water treatment plant located at the south end of Yellow Lake and the area in proximity to Yellow Hill.

3.2 SITE AND VICINITY CHARACTERISTICS

This section provides information on the environmental setting of the project site, including climate, topography, geology, groundwater, surface water, and other pertinent site elements.

3.2.1 Climate

The Metlakatla Peninsula lies in the temperate maritime coastal climate typical of southeastern Alaska; relatively warm winters, cool summers and heavy precipitation characterize this area. Average winter temperatures range from 30° to 45° Fahrenheit (F); summer temperatures range from 42° to 62° F (NOAA 1979, NOAA 1989). Annette Island Weather Bureau records indicate an average annual precipitation of 103 inches, which includes an average snowfall of 12 inches or less (Seymour, 1996; NOAA, 1989). Low cloud cover, including foggy conditions and poor visibility, is present approximately 70% of the year (U.S. DOC, 1968). Recorded wind information indicates that the mean wind speed is approximately 12 miles per hour (mph) predominantly from the south-southeast (U.S. DOC, 1979). Higher winds can occur with winter storms, with sustained winds above 30 mph common in January and February (Cohen, 1988), and storms with winds over 100 mph occurring on occasion during this period (Benson, 1996).

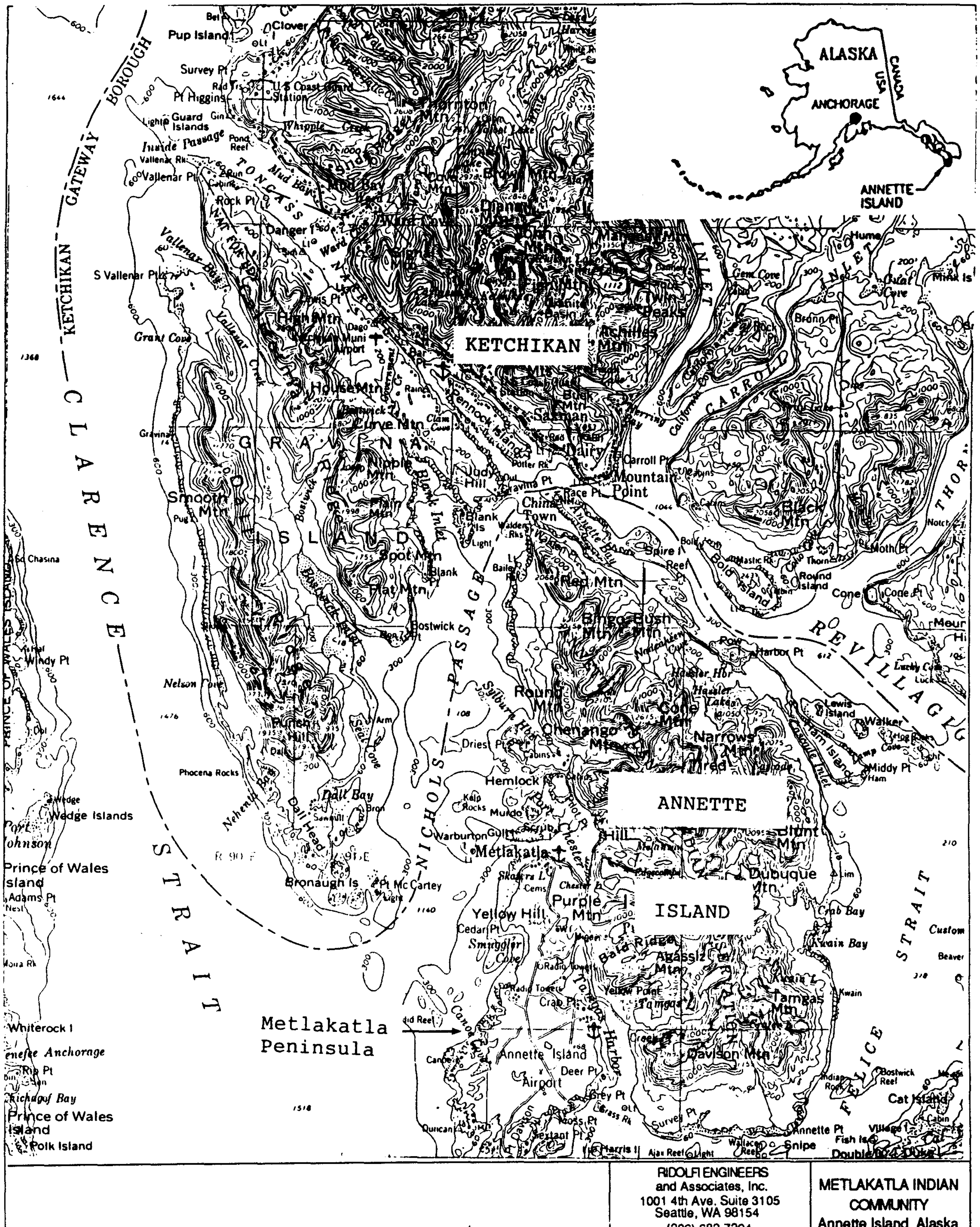
3.2.2 Topography

The Metlakatla Peninsula is relatively flat, mostly between sea level and 100 feet above mean sea level (MSL). The landing field is located on the south-central portion of the peninsula at an elevation of 110 feet MSL (NOAA, 1989). The highest point in the project site is approximately four miles north of the landing field at Yellow Hill (540 feet MSL). There are fairly steep slopes (25 to 42 per cent) from this hill down to the adjoining areas. The slopes on the remainder of the peninsula predominantly range from zero to one per cent outward from the center of the peninsula toward the coastal beaches. There are numerous lakes, marshes, bogs and other typical lowland features throughout the peninsula. The flat grades and numerous lakes were formed in part through glacial processes during the Pleistocene epoch; the last glacial retreat was nearly 10,000 years ago. With the exceptions of Canoe Cove, the Village Point and Tamgas Harbor, most of the coast line is irregular and rocky (USGS, 1962).

3.2.3 Geology

Annette Island is located in the northern region of the Cordilleran mountain range, an extensive mountain system which extends along the entire western coastline of North America from southern California to the Alaskan Peninsula. The bedrock underlying Annette Island consists of igneous and metamorphic rocks of late Paleozoic to early Mesozoic age. Bedrock underlying the Metlakatla Peninsula consists primarily of schist, gneiss, and hornfels, mixed with foliated granitic rocks, and with further gradation to foliated quartz diorite. Yellow Hill is a relatively isolated area of yellow weathering outcrops of dunite and pyroxenite, ultramafic rocks with very little siliceous components (Berg et al, 1988).

The surface geology of the peninsula is dominated by organic and alluvial sedimentary deposits, ranging in depth from 4 to 25 feet. These deposits include firm diamicton, emergent shoreline, modern shore and delta deposits, alluvium, muskeg, and other organic deposits, as well as artificial fill brought in to allow construction of roads and other features. The surface soils are generally comprised of poorly drained, sandy gravels mixed with clays and decomposed organic matter. The United States Department of Agriculture (USDA) Soil Conservation Service has classified the soils and wetlands areas near the landing field as "SO18", or poorly



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Annette Island, Alaska

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0 SCALE IN MILES 10

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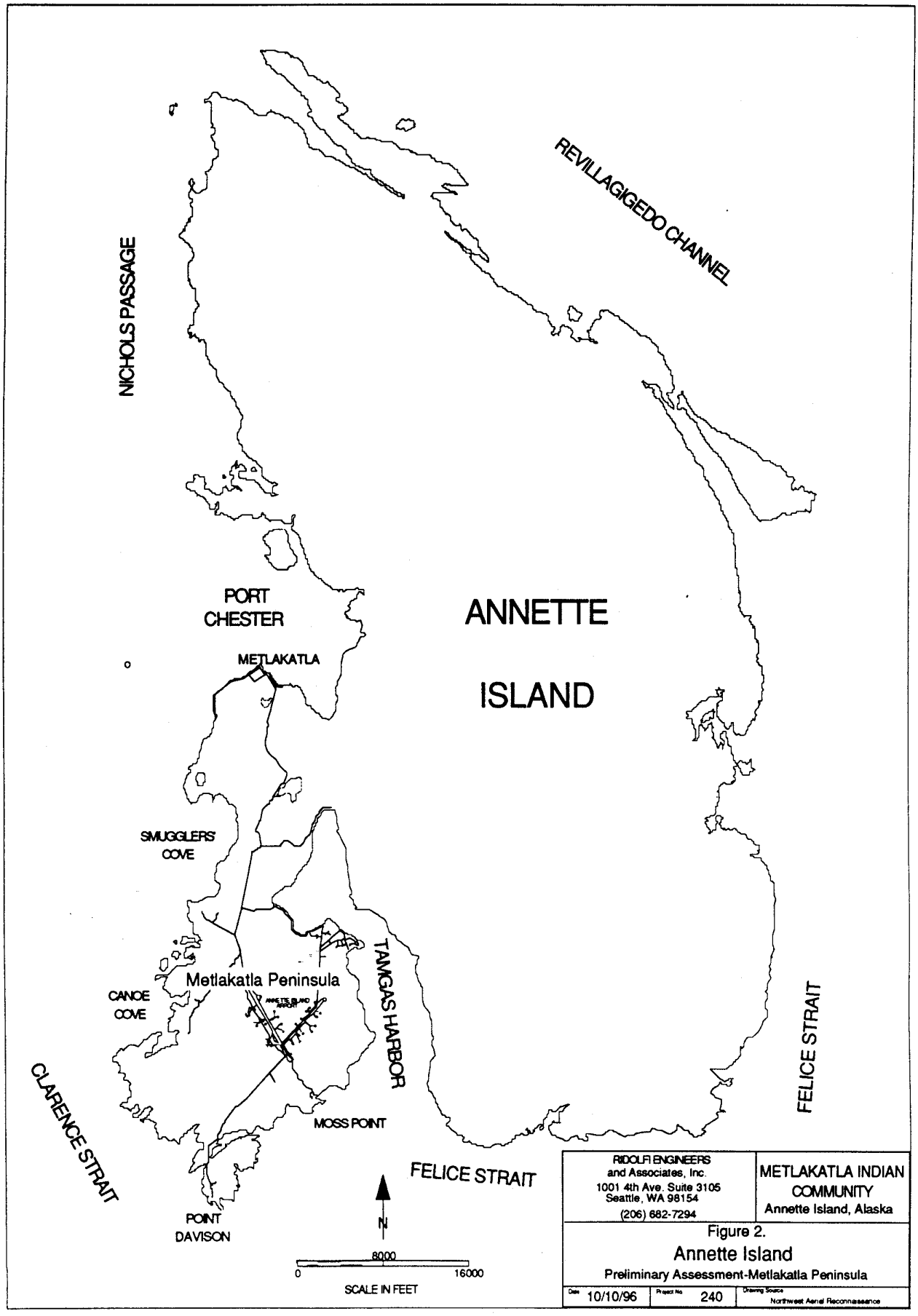
Figure 1.
Location and Vicinity Map
Preliminary Assessment-Metlakatla Peninsula

Date	Project No.	Drawing Source
10/10/96	240	Northwest Aerial Reconnaissance


REVILLAGIGEDO CHANNEL
NICHOLS PASSAGE
PORT CHESTER
ANNETTE ISLAND
METLAKATLA
SMUGGLERS' COVE
Metlakatla Peninsula
CANOE COVE
TAMGAS HARBOR
FELICE STRAIT
CLARENCE STRAIT
MOSS POINT
POINT DAVISON
FELICE STRAIT
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SCALE IN FEET
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METLAKATLA INDIAN COMMUNITY
Annette Island, Alaska
Figure 2.
Annette Island
Preliminary Assessment-Metlakatla Peninsula
Date 10/10/96
Project No. 240
Drawing Source
Northwest Aerial Reconnaissance

drained organic soils which are typically found in nearly level areas or in marshes formed in creek or valley bottoms (USDA, 1979).

3.2.4 Ground Water

The geology of the Metlakatla Peninsula determines the groundwater availability and quality. The dense, igneous and metamorphic bedrock has few, poorly spaced fractures tends to limit groundwater flow. In addition, the surface deposits of muck and organic muskeg tend to retain water and do not allow for appreciable recharge of the aquifer. Ground water is not currently used for potable water on the island.

Five test wells were drilled (Marcher et. al, 1971) to determine the availability of subsurface water bearing strata below grade on the peninsula. These wells were drilled to depths of between 100 and 305 feet. Water bearing fractures were encountered in four of the five wells, however, yield capacities were either insufficient or unsustainable for use as a potable water supply (Marcher, 1971).

Several small springs and seeps are located in the highly fractured ultramafic rocks at Yellow Hill; other small springs have also been identified from fractured rocks on the west side of the peninsula. However, these springs and seeps do not flow during the drier summer months, and are not used for potable water (Marcher et. al, 1971).

3.2.5 Surface Water

The Metlakatla Peninsula is a marshy, heavily vegetated lowland with numerous creeks that drain ponds and lakes, or originate from muskeg runoff. Yellow Lake is the largest lake with a normal wetted area of about 75 acres. This lake is located east of and adjacent to Yellow Hill at an average elevation of 230 feet MSL (USGS, 1962). The recharge area for the lake is at a higher elevation than the majority of the project site, which limits the potential for contamination from surface runoff, and it is possible to utilize lake water for a gravity-supplied drinking water source for the Metlakatla Peninsula.

Chester Lake is an approximate 72 acre lake located about two miles east of the Town of Metlakatla and outside of the project site. The Town of Metlakatla uses Chester Lake for their primary potable water source (Metlakatla, 1972). Chester Lake is also located at a higher elevation than the peninsula, which allows for potentially better quality water, and for gravity water supply to Metlakatla. Potable water consumption for domestic purposes is approximately 1 million gallons per day.

3.2.6 Vegetation

The vegetation of the Metlakatla Peninsula can be categorized into three primary wetland communities: coastal meadows, muskeg, and coastal forest (non-commercial timber) (Metlakatla, 1972). Coastal meadows are tidally-influenced areas which occupy alluvial deposits in and near the mouths of streams. These areas are dominated by sedges and grasses such as Lindbye's sedge, tufted hairgrass, and silverweed, and transition into areas dominated by clumps of hairgrass with other species such as yarrow, shootingstar beach pea and beach rye grass. Further transition occurs between this and the coastal forest community, with areas dominated by beach rye grass mixed with other grasses, yarrow, sedge, shootingstar, black lily, buttercup, and other similar plants.

The coastal forest community loosely follows the island perimeter (Metlakatla, 1972) and can also be found in isolated inland areas. This community is dominated by western red cedar, western hemlock, Sitka spruce, and Alaskan yellow cedar. Lodgepole pine is found in and near muskeg areas. Understory species include thimbleberry, salmonberry, huckleberry, bunch berry, wild cranberry, salal, devil's club, bog kalmia and wild rose. Many other species such as ferns, horsetail, and mosses and lichens thrive in this area as well (Metlakatla, 1972).

The National Wetlands inventory map indicates that a majority of the project site is located in a scrub-shrub type wetlands complex dominated by a muskeg-type ecosystem (E&E, 1992). This ecosystem type is characterized by sphagnum peat or sedge slope bogs built up of 5 to 15 feet of organic material over bedrock with the water table at or near the ground surface (Metlakatla, 1972). Vegetation is characterized by scattered, stunted western red cedar, western hemlock, lodgepole pine, Alaskan yellow cedar and mountain hemlock. Common shrubs in this area include bog rosemary, swamp laurel, labrador tea, crowberry, and crabapple. Low vegetation includes bracken fern, skunk cabbage, sedges, scirpen, grasses and other forbs (Metlakatla, 1972).

Other areas within the project site include Yellow Hill which is mostly unvegetated, and the nearshore vegetation which includes several species of eelgrass, brown algae, kelp, and red coralline algae (E&E, 1992).

3.2.7 Wildlife

Wildlife identified on the Metlakatla Peninsula include wolves, beaver, Sitka Black-tailed deer, red squirrels, and other small mammals (Metlakatla, 1972). Avian species include grouse, ptarmigan, American Bald Eagle, blue heron and numerous species of waterfowl. Federally-listed endangered species include the American Perigrine Falcon and the humpback whale (Lindel, 1996 and Zimmerman, 1996). Perigrine falcons nest and breed primarily along the coastlines of the islands of southeastern Alaska; however they have not specifically been identified on Annette Island (E&E, 1992). American Bald Eagles nest in snags and other high locations along the southeastern Alaskan coastline. Humpback whales typically pass through the waters neighboring Annette Island as they migrate to and from summer feeding and winter breeding grounds (E&E, 1992). Three stocks of Snake River salmon migrate through the area: sockeye (endangered), spring-summer chinook (threatened) and fall chinook (threatened) (Zimmerman, 1996).

3.2.8 Cultural Resources

Based upon information from the Alaska Heritage Resources Survey, there are no cultural resources that have been formally identified and recorded for the area encompassed by the former Annette Island airbase on the Metlakatla Peninsula (ADNR, 1991 and E&E, 1992). However, culturally important sites and resources for the Metlakatla Indian Community may exist within the project site.

3.3 DESCRIPTION OF ROADS, UTILITIES AND OTHER IMPROVEMENTS

3.3.1 Roads

The roadway infrastructure originally developed for the airbase in the early 1940s (Bush, 1984) is still in use and is in fair to good condition. The roadway system has been minimally augmented in developed areas over the last 55 years, but in general, the extensive presence of muskeg ground cover has limited roadway expansion due to high construction expenses. There

are approximately 23 lineal miles of roadway in the project site. Approximately 8 miles are constructed with a gravel base, and 5 miles (Metlakatla Airport Road) are paved with an asphaltic macadam surface course. Most of the primary roadways are shown on Figure 3.

Recent road modifications as indicated by comparison of the original airbase as-built road plans (Bush, 1984) with recent aerial photographs (Aerial, 1995) include:

- alteration of the Metlakatla Airport Road in the vicinity of the 6-inch gun emplacement/municipal landfill;
- construction of a road to the White Alice facility near Smugglers Cove;
- construction of a spur road to the Remote Control/Air Ground facility at Smugglers Cove;
- construction of a road from the Metlakatla-Airport Road westward to Smugglers Cove (Beach road);
- construction of the parallel road on the west side of the main northwest-southeast trending runway connecting the hangar area with the Metlakatla-Airport Road;
- construction of a road to a microwave relay communication station (similar to the White Alice facility) near Point Davison; and
- construction of a road to the satellite tracking station at Point Davison.

Several roads are not maintained and are no longer in use. These include a now-collapsed wood plank road built on wood pilings connecting the main runway and the dock/construction camp area. And a coastal road trending south from Tent Point which is overgrown with vegetation. Other unmaintained roads may exist, but none were identified during the site reconnaissance.

3.3.2 Utilities

Public utility services currently provided to the landing field and other parts of the project site include electricity, water, and telephone. Electrical service is currently provided by Metlakatla Power and Light. The utility generates electricity via a diesel-fueled generating plant in Metlakatla, and 2 hydroelectric generating plants located on the north end of Tamgas Harbor (ADNR, 1977 and Dunne, 1996). Water service is provided by the City of Metlakatla (ADCED, 1984) through an 8-inch steel pipeline that replaced the DOD-constructed system. Water supplied to the site originates at Yellow Lake, and distribution lines run to the hangar area, the Weather Bureau housing, Annette Inn, and Tent Point area (Metlakatla, 1972).

The Metlakatla Indian Community operates a household garbage collection system that serves the community of Metlakatla. Prior to the closing of the commercial airport in mid-1970s, the solid waste collection service extended to the hangar area and residential areas of the lower peninsula. The current solid waste disposal facility, a landfill located near the quarry has been in operation since the early 1960s.

A waste water treatment facility was operated by the U.S. Coast Guard (USCG) from the late 1950s to the mid 1970s (Aerial, 1958 and 1973) to treat liquid waste generated at the hangar area and USCG quarters (Metlakatla, 1972). An open lagoon that uses compressed air to aerate sewage effluent generated at the office and residences in the former FAA housing area is currently in use and has been located there for approximately 30 years (Aerial, 1961 and 1973). A septic sewer system is now used in the hangar area. All single and multi-family residences, the airline terminals, and other buildings on the project site have historically used septic systems.

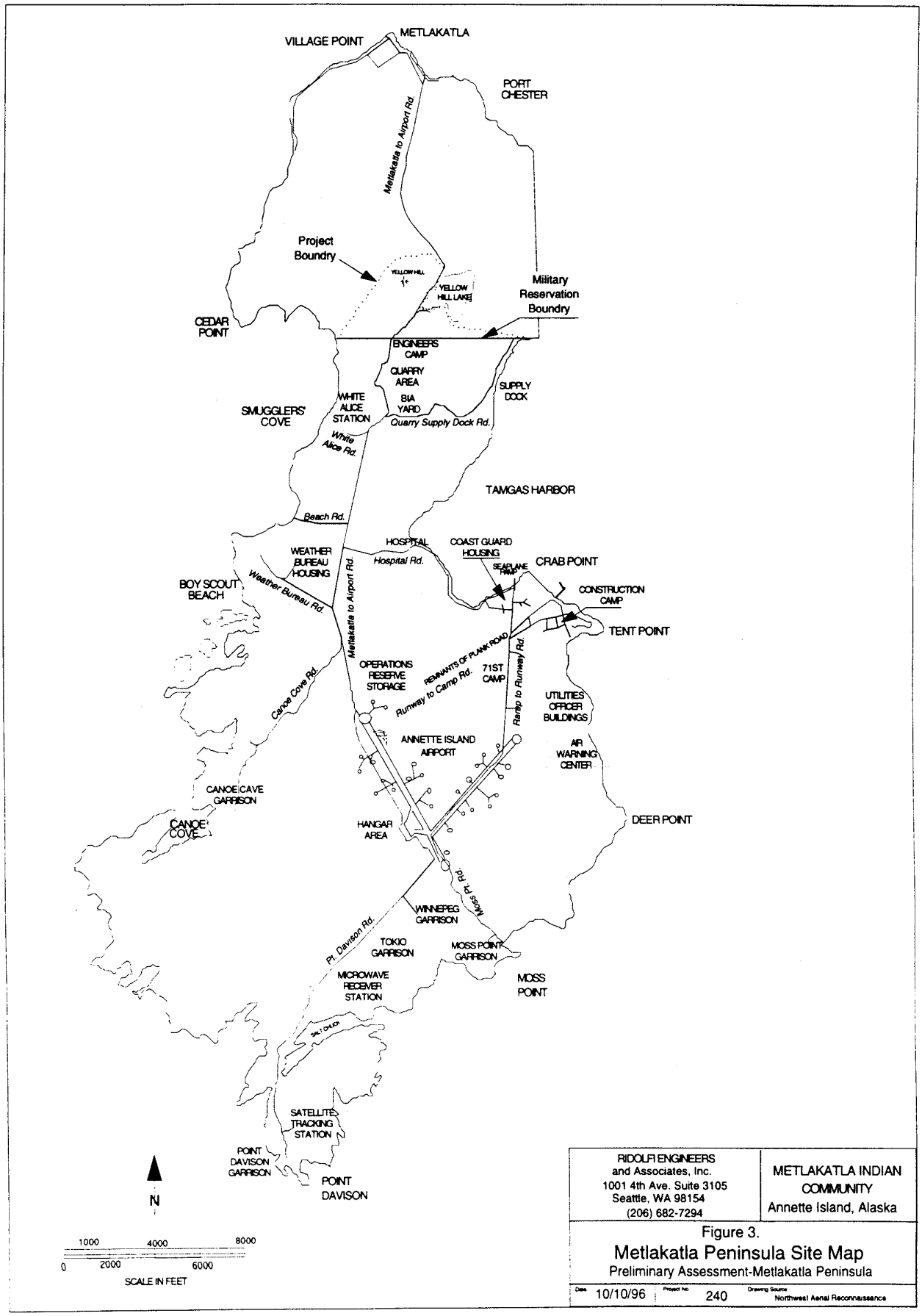

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Figure 3.

Metlakatla Peninsula Site Map

Preliminary Assessment-Metlakatla Peninsula

Date	Project No.	Drawing Source
10/10/96	240	Northwest Aerial Reconnaissance

Fuel oil is currently used as a heating source in the MIC Forestry office building and the occupied residential buildings on the former airbase. Storage of the fuel was observed to be above ground storage tanks, generally located adjacent to the respective building to which service is provided.

3.3.3 Structures

There are numerous structures, garrisons, and aviation related beacons and navigation equipment located within the project site.

The original authorized airbase improvements consisted of the following (Bush, 1984):

- a 300-foot x 6,000-foot northwest-southeast trending, macadam runway, a northeast-southwest trending, 300-foot x 7,500-foot water-bound macadam runway, and associated taxiways, aprons, and parking areas;
- a fuel storage area;
- a petroleum pipeline system;
- an aircraft maintenance hangar;
- a 60-foot x 600-foot rock filled, steel-grated seaplane ramp;
- four Panama coast artillery gun emplacements near Point Davison;
- two 6-inch naval gun emplacements near Smugglers Cove;
- anti-aircraft batteries;
- two wood-piling docks in Tamgas Harbor;
- a seventy-five bed hospital;
- a roadbed material quarry;
- housing for approximately 210 officers and 3,500 enlisted men at the construction camp and garrison areas;
- 12,500 square feet (sf) of warehouse space, 14,400 sf of cold storage, and 22,400 sf of ordnance storage; and
- utilities, roads, and communication/technical facilities.

DOD-constructed improvements identified in reviewed reports that are still standing or exist are:

- the airplane hangar (Sverdrup, 1984);
- the airport control tower (Sverdrup, 1984);
- a steam boiler building (Sverdrup, 1984);
- a power house building (Sverdrup, 1984);
- a gasoline station/garage at the former construction camp (LB&M, 1996);
- gun emplacements near Smugglers Cove and Point Davison (Bush, 1984);
- a sea plane ramp near Crab Point;
- a wooden dock in Tamgas Harbor (Bush, 1984);
- runways, plane taxiways and parking areas (Bush, 1984);
- buildings at the Winnipeg Garrison (refurbished by Pan American Airways for overnight passenger accommodations), also referred to as Annette Inn (Sverdrup, 1986);
- an airport beacon tower (LB&M, 1996); and
- and a large metal (Sverdrup, 1986) hut.

Improvements identified in reviewed reports constructed on the former airbase subsequent to the original DOD facilities that are still standing include:

- USCG housing near the sea plane ramp (Metlakatla, 1972);
- an apartment building for airline personnel (Sverdrup, 1986);
- two weather bureau buildings at the airport (Walker, 1983);
- weather bureau personnel housing at Smugglers Cove (Walker, 1983);

- a former USCG garage (Deering, 1996);
- paving of the main northwest-southeast trending runway with asphalt (Denfeld, 1996);
- three above ground tanks west of the hanger (Sverdrup, 1986);
- a former airline passenger terminal building (Sverdrup, 1986);
- former FAA housing at Tent Point (Walker, 1983);
- an above ground petroleum storage tank farm near the wooden dock (Aerial, 1961);
- a former fire station (Metlakatla, 1972);
- a communications relay station at White Alice (Sverdrup);
- a communication station near Point Davison (Aerial, 1973).

There are various operational and decommissioned FAA navigation and communication facilities identified in reviewed reports include (E&E, 1992, 1994, and 1995):

- a very high frequency omnidirectional range tactical air navigation facility (VORTAC);
- a directional finder antenna, a remote center air ground communications building and a newly installed USCG GIS Station (Benson, 1996);
- a non-directional beacon;
- an air traffic control tower;
- a glide slope transmitter
- approach lighting system towers;
- a middle marker building;
- a remote receiver building;
- short approach lighting system/runway end identification lighting system;
- localizer building.

Other buildings constructed post-DOD (or privately converted) identified in reviewed reports or aerial photographs, but that are no longer in existence include:

- Coast Guard multi-family housing at Crab Point (Metlakatla, 1972);
- a gasoline station with underground tanks located west of the air traffic control tower (E&E 1990);
- a Standard Oil Company office and oil storage building (E&E, 1992);
- a Pan American Airlines airline terminal building southeast of the air traffic control tower (Baker, 1962);
- a chapel (Metlakatla, 1972);
- a public school (Metlakatla, 1972);
- a recreation hall, service building, and Elks club (Sverdrup, 1986).

3.4 HISTORICAL USES OF THE PROPERTY

With the exception of the community of Metlakatla, its immediate environs, and a perimeter road, the Metlakatla Peninsula was undeveloped until 1936 (Kohlstedt, 1954). During the 1930s, a field survey was completed by the Civil Aeronautics Administration (CAA), to evaluate the possibility of constructing an airfield on the peninsula south of the community of Metlakatla (Cloe, 1991). In 1940, Forest Service and Civilian Conservation Corps personnel under the direction of the U.S. Army Corps of Engineers began construction of the Annette Island Army Air Corps airbase (Bock, 1987). The airbase was established by the DOD to provide an intermediate landing field and staging area between airbases in the continental United States and Alaska (Bush, 1984). The base was fully operational by the end 1941 (Rakestraw, 1981).

The size of the Annette Island airbase originally totaled 12,783 acres, however, military operations were concentrated on only 10,728 acres (Sverdrup, 1986). A watershed on the

peninsula and a watershed across Tamgas Harbor on the eastern portion of Annette Island totaling approximately 2,055 acres comprised the balance of the airbase. (Sverdrup, 1986).

3.4.1 Royal Canadian Armed Forces

Royal Canadian Air Force (RCAF) and Canadian Army units along with U.S. military personnel manned the Annette Island air field beginning in May, 1942 (Bush, 1984; Cloe, 1991). The Canadian units operated independently, and were not under the direct command of the Department of Defense (Cloe, 1991). RCAF fighter and bomber squadrons totaling 40 to 50 planes (Weicht, 1996), were stationed at Annette Island and used to patrol the coastal waters of Southeastern Alaska. The RCAF also provided air protection for the port of Prince Rupert, British Columbia, a major supply and troop staging center for the Aleutian military campaign, located approximately 60 miles southeast of the airfield (Cohen, 1981). After the defeat of Japanese forces at Attu Island and their subsequent withdrawal from Kiska Island in 1943, Canadian forces were withdrawn from Annette Island. The airbase reverted to a transit base for supplying material for Aleutian-based bombing operations against Japan (Denfeld, 1996).

3.4.2 Federal Aeronautics Administration

After World War II, the airfield was used as an emergency landing field (Hayward, 1996). In 1947, the Department of Commerce requested the Department of Defense to transfer control of the airbase to the Civil Aeronautics Administration (CAA) for the operation of a commercial airport and air navigation and communication facilities. The request was granted, and in 1948 the CAA (subsequently changed to the Federal Aeronautics Administration or FAA) entered into a agreement with the Metlakatla Indian Community (MIC) to lease 4,880 acres of the former Annette Island airbase for the operation of a commercial airport to serve Ketchikan and other Southeast Alaska communities, and an air navigation and communication center (E&E, 1991; E&E, 1992).

The former airbase operated as a commercial airport with regularly scheduled airline service from approximately 1948 until 1974. Airlines servicing Annette Island included Pan American Airways (Atkinson, 1996), Western Airlines (Sverdrup, 1986), Alaska Airlines (Wellington, 1996), Pacific Northern Airlines (Sverdrup, 1986), and Ellis Airlines (Wellington, 1996). In 1974 a new regional airport was constructed on Gravina Island near Ketchikan, Alaska (Harrison, 1980). After completion of new airport, all regular commercial airline traffic to Annette Island ceased.

The FAA has operated aircraft navigation and communication facilities on the former airbase from 1948 to the present. With the cessation of airline traffic in 1974, the FAA decommissioned the air traffic control tower, the glide slope transmitter, the short approach and runway end identification lighting system, the approach lighting system towers, and the middle marker and localizer buildings (E&E, 1995). The FAA returned all leased land except acreage associated with the currently operational remote center air ground communications (5.7 acres), remote receiver building (46.14 acres subsequently decommissioned in 1989), non-directional beacon (10 acres), and VORTAC (91.82 acres) facilities back to the jurisdiction of the MIC (E&E, 1991).

3.4.3 United States Coast Guard

The United States Coast Guard (USCG) commissioned an air detachment to Annette Island in 1944 and established a search and rescue/law enforcement base adjacent to the seaplane ramp in 1946. The USCG leased shop and hangar space from the CAA beginning in 1947, quarters

buildings in 1952 and took over the ownership of the airport/hangar area in 1956 (LB&M, 1996). In the mid 1960s, the USCG constructed a family housing development at Crab Point (Deering, 1996) and a maintenance building north of the hangar. The USCG station remained operational until 1977 when all Annette Island-based operations were transferred to Sitka, Alaska (LB&M, 1996).

3.4.4 Other Project Site Use

Some building improvements on the former Annette Island airbase, but not on land leased by the FAA, occurred after the departure of the DOD. In 1958, the U.S. Army leased 171.45 acres at Point Davison for a satellite tracking radar station (Sverdrup, 1986). Philco operated the station for the Army (Page, 1962). In 1961, the U.S. Air Force constructed the White Alice Communication Center at Smuggler Cove (Sverdrup, 1986). RCA operated the station for the Air Force (Baker, 1962). The building is currently utilized as the headquarters of the local utility, Metlakatla Power and Light (Benson, 1996). In the 1960s, Alaska Telephone Corporation established a tropospheric relay station for air force and commercial traffic at Point Davison (Baker, 1962).

3.5 CURRENT USE OF THE SITE

The majority of the former Annette Island airbase is not currently being utilized. The FAA currently operates four unmanned navigation and communication aid facilities on 108.44 acres of leased land in proximity to the landing field (E&E, 1992. The National Weather Service (old Weather Bureau) operates a weather station on an area of approximately 15,500 sf north of the hangar. The Metlakatla Indian Community (MIC) occupies a number of the former FAA housing buildings at Tent Point for the forestry offices. Members of the community have established a small saw mill inside the hangar and a mill machinery and equipment maintenance shop is operated in a former USCG building immediately north of the hangar. Feedstock for the hangar mill is located off of the Metlakatla Peninsula (Benson, 1996).

Currently leased FAA and other facilities on Annette Island are as follows:

3.5.1 Tactical Air Navigation (VORTAC) Facility

The VORTAC facility is located approximately 1.5 miles northeast of the hangar (Aerial, 1961) on 92 acres (E&E, 1991). The facility building is a concrete block structure with a flat roof and concrete pad. A circular overhead metal Doppler transmission grid, two USTs and one AST are within a circular (150 foot diameter) fenced enclosure around the building. An antenna array consisting of four towers, and an older, wooden, raised 20-foot platform are located west of the fence line.

3.5.2 Directional Finder (DF) Facility

The DF facility is located approximately 1.4 miles northeast of the hangar (Aerial, 1961) on 0.92 acre (E&E, 1991). The facility consists of a metal antenna tower.

3.5.3 Remote Center Air Ground (RCAG) Facility

The RCAG facility is approximately 2.25 miles north of the hangar (Aerial, 1961) on 5.7 acres (E&E, 1991). The facility building is a concrete block structure with a flat roof and concrete pad. One UST is located on the east side of the building. The facility has recently been modified, and the tower configuration no longer resembles the older diagrams for the site.

3.5.4 Non-Directional Beacon (NDB/H-Marker) Facility

The NDB/H-Marker facility is located approximately 2.4 miles north of the hangar (Aerial, 1961) on 10 acres (E&E, 1991). The facility consists of a mobile building that has been placed on an existing concrete pad. The building is approximately 25 feet south of a fenced area containing a 120 foot metal tower.

3.5.5 Other Active Facilities

Weather Service Facilities
The two weather service facility buildings are located near the hanger, one approximately 250 feet to the north and the other 300 feet to the northeast (Aerial, 1961). The northern (office) building is a wood frame structure with wood siding, an elevated foundation, and metal roof. The northeast (weather balloon) building is a wood frame structure with wood siding, an elevated foundation and dome. The area between the building contains the Weather Bureau gauging instruments.

Hangar Facility
The Hanger Facility is located west of the main runway near the intersection of "B" runway. The facility building is a steel framed structure, with steel posts, trusses, and beams, a metal roof, cementitious exterior walls, cementitious interior walls, interior piping with thermal insulation, vinyl tile flooring in former offices, and a concrete foundation (Cohen, 1988).

Maintenance Garage
The Maintenance Garage facility is located approximately 50 feet north of the hangar. The facility building is a metal building with a concrete foundation. The building is being used by the sawmill operation to store spare parts, and to perform maintenance activities on mobile sawmill machinery.

Landing Fields
Two runways are located at the landing field in the south central portion of the peninsula. A 300-foot x 7,500-foot northwest-southeast trending (main) runway is paved with asphalt and a 300-foot x 6,000-foot northeast-southwest trending ("B")runway has a crushed rock surface. The two runways are operational and sporadically used as landing fields by private and commercial aviators. However, no fueling facilities, landing lights, or traveler amenities exist at the landing field.

3.6 USES OF AREAS SURROUNDING THE SITE

The Town of Metlakatla is located approximately 2.25 miles north of the northern boundary of the project site. The area between the community and this boundary is largely undeveloped consisting of muskeg with scattered surface lakes. In addition to the growing potential for tourism, the economy is primarily natural resource-based with timber and fishing constituting the primary income sources. Timber milling, cutting and shipping are a major portion of the economy (Metlakatla, 1972). There are two lumber mills in town, in addition to the hanger sawmill.

With the majority of the peninsula surrounded by salt water, and MIC right to waters within approximately 3,000 feet of its shores (Metlakatla, 1972), there is a sizable fishing fleet based out of Metlakatla. Historically, the principle catch has been salmon; however, increased competition, and depleted salmon stocks currently limit the economic feasibility of this market.

Other fishing stocks include herring, halibut and shellfish. There is a cold storage facility for seafood operating in Metlakatla.

Other economic bases in the Metlakatla Indian Community include limited retail and service industries, including tourism. The Metlakatla-Airport Road which connects the community with the airbase was completed in 1945 and provides a link to the FAA and other facilities at the project site (Hayward, 1996 and Bush, 1984).

4.0 RECORDS REVIEW

Research of appropriate literature was performed prior to the field effort associated with this preliminary assessment in order to gain understanding of the site conditions. The information reviewed has been categorized according to pertinence to physical setting, historical content, and additional records and information. Environmental investigation reports authored by other consulting firms also were reviewed and the scope of these investigations are summarized briefly in Section 4.3 below.

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4.3 PRIOR ENVIRONMENTAL INVESTIGATION INFORMATION

A list of prior environmental investigations performed on the site follows. Findings of the investigations are summarized in Appendix A.

1/1986 Inventory Report for Annette Island Landing Field, Alaska, Sverdrup & Parcel and Associates, Inc.

Sverdrup conducted a field investigation for the U.S. Army Corps of Engineers (COE) at five sites associated with Department of Defense operations (the Winnipeg garrison/Annette Inn, airport hangar, remote relay station, main construction camp, and power house) on the former airbase. The investigation inventoried 45 existing buildings

or building remnants, and hazardous materials in or in proximity to the inventoried structures.

3/1990 Hazardous and Toxic Waste Report, Phase II Field Investigation, Annette Island Landing Field, Annette Island, Alaska, Ecology and Environment, Inc. (E&E)

E&E conducted a field sampling investigation for the COE at the hangar area, the former asphalt plant, and the above ground storage tank farm on the former airbase to identify potential hazardous and toxic wastes (HTW), and petroleum oil and lubricant (POL) sources that may require remedial action, and to collect information necessary to develop design criteria for demolition of structures and removal of other debris.

6/1990 Pre-Design Report Phase II Field Investigation, Annette Island, Alaska, Ecology and Environment, Inc.

This report summarized the results of the HTW and POL sampling investigation at the hangar area, at the asphalt plant, and at the tank farm, and evaluated beneficial uses of the three areas as they related to DOD cleanup responsibility as specified under Defense Environmental Restoration Program (DERP) guidelines.

10/1990 FAA UST Management Report for Annette Island, Alaska, Harding Lawson Associates (HLA)

HLA conducted an investigation for the FAA to identify and compile information on underground storage tanks at the VORTAC, RCAG, and NDB/M-Marker facilities.

5/1992 Environmental Compliance Investigation Report, Annette Island FAA Station, Annette Island, Alaska, Ecology and Environment Inc.

E&E conducted a compliance investigation for the FAA that included documentation of the chronology of FAA property utilization, a field investigation to evaluate suspected releases of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) hazardous substances and suspected discharges of petroleum oil and lubricant products, identification of other potential environmental compliance issues, observation of hazardous material housekeeping and management practices, and an inventory of all hazardous materials found at the FAA-leased VORTAC/DF, RCAG, and NDB/H-marker facilities, and six former FAA-leased facilities (the hangar, ATCT, GS, ALS, MM, and RR).

5/1995 Site Cleanup and Investigation Report Annette Island FAA Station, Annette Island, Alaska, Ecology and Environment, Inc.

E&E conducted a field investigation for the FAA to further identify and control contaminant, petroleum and hazardous material releases from the VORTAC, RCAG, NDB/H-Marker, hangar, ALS/SALSR, GS, and LOS facilities which would come under the regulatory jurisdiction of the Clean Water Act (CWA), and the State of Alaska Department of Environmental Conservation (ADEC), Hazardous Substance Acts.

11/1995 Remedial Action Plan Hangar Facility Annette Island FAA Station, Annette Island, Alaska, Ecology and Environment, Inc.

E&E conducted a PCB contamination investigation for the FAA in the northeast portion of the hangar to estimate the lateral and vertical extent of polychlorinated biphenyl (PCB) contamination in concrete and soil, and to propose a remedial action plan to remediate the PCB-impacted areas. The investigation focused on PCB contamination confirmed by prior investigations by E&E on portions of the hangar's concrete slab floor and adjacent walls, soil beneath heavily oil-stained sections of the slab floor in the northwest quarter of the hangar, and in near-surface soil located between the hangar and a maintenance garage north of the hangar.

1/1996 Annette Island Environmental Issues, Annette Island, Alaska, LB&M Associates, Inc. (LB&M)

LB&M conducted a field investigation for the FAA to outline impacts of past operations at the Annette Island air field and to inform other entities (including, but not limited to the U.S. Army Corps of Engineers, U.S. Navy, U.S. Coast Guard and the Standard Oil

Company) of their possible involvement in environmental restoration work. Six issues of environmental concern associated with past activities conducted on the former airbase were delineated: 1) leaking fuel from storage tanks and pipelines; 2) polychlorinated biphenyl-containing dielectric fluid in electrical equipment; 3) asbestos-containing construction materials; 4) lead-based paint; 5) abandoned drums; and 6) miscellaneous ordnance, explosives, and possible nerve gas.

4.4 ADDITIONAL RECORDS SOURCES

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5.0 SITE RECONNAISSANCE AND INTERVIEWS

5.1 INVENTORY AND DESCRIPTIONS OF SITE FEATURES

The site reconnaissance component of this PA consisted of a physical inspection of the site to corroborate research information, confirm current conditions at the site, and to collect additional information to support the PA. The site reconnaissance was conducted in accordance with a site-specific Health and Safety Plan developed for the project. Three personnel conducted the site reconnaissance between April 21 and May 1, 1996. The primary objectives of the site reconnaissance were to visit locations of potential concern delineated on DOD and FAA maps, and to inventory existing structures and features on the project site. Areas of environmental concern were located, inspected, and photographed. Existing conditions at the site were assessed and the presence of petroleum products or hazardous substances was noted. Photographs are included in Appendix B. Other maps and diagrams used in the site inventory are included in Appendix C.

The interview component of the PA consisted of face-to-face and phone interviews. Personal interviews were conducted during April with parties knowledgeable of the historical development and past and current use of the Metlakatla Peninsula. Knowledgeable persons included individuals that worked on the construction of the airbase, that were employed by federal agencies or commercial entities which operated at the site, or who otherwise have personal knowledge regarding the environmental conditions on the Metlakatla Peninsula. Interview questionnaire forms are included in Appendix D.

Most of the major DOD and FAA structures and features were visited during the site reconnaissance (Figure 3). Structures occupied as residences by MIC members were not entered for inspection. Operational FAA, BIA, National Weather Service, and Metlakatla Power and Light facilities were not inspected. Buildings constructed by the U.S. Department of Defense (DOD) were generally either pre-fabricated wood-frame structures with wood or concrete foundations or prefabricated metal huts (Bush, 1984). It was observed during the site reconnaissance that the majority of the wood-frame buildings have deteriorated. Concrete pads, wood pilings, or piles of debris (wood and metal roofing) were generally the only discernible remnant features of the former wood-frame buildings. A number of metal huts are scattered throughout the DOD developed portions of the former airbase. The majority of the huts have been stripped of their metal siding, and the hut's interior metal framework has often times collapsed. The inventory of major features and structures is described below (ordered from north to south) and illustrated in Figures 4 through 7.

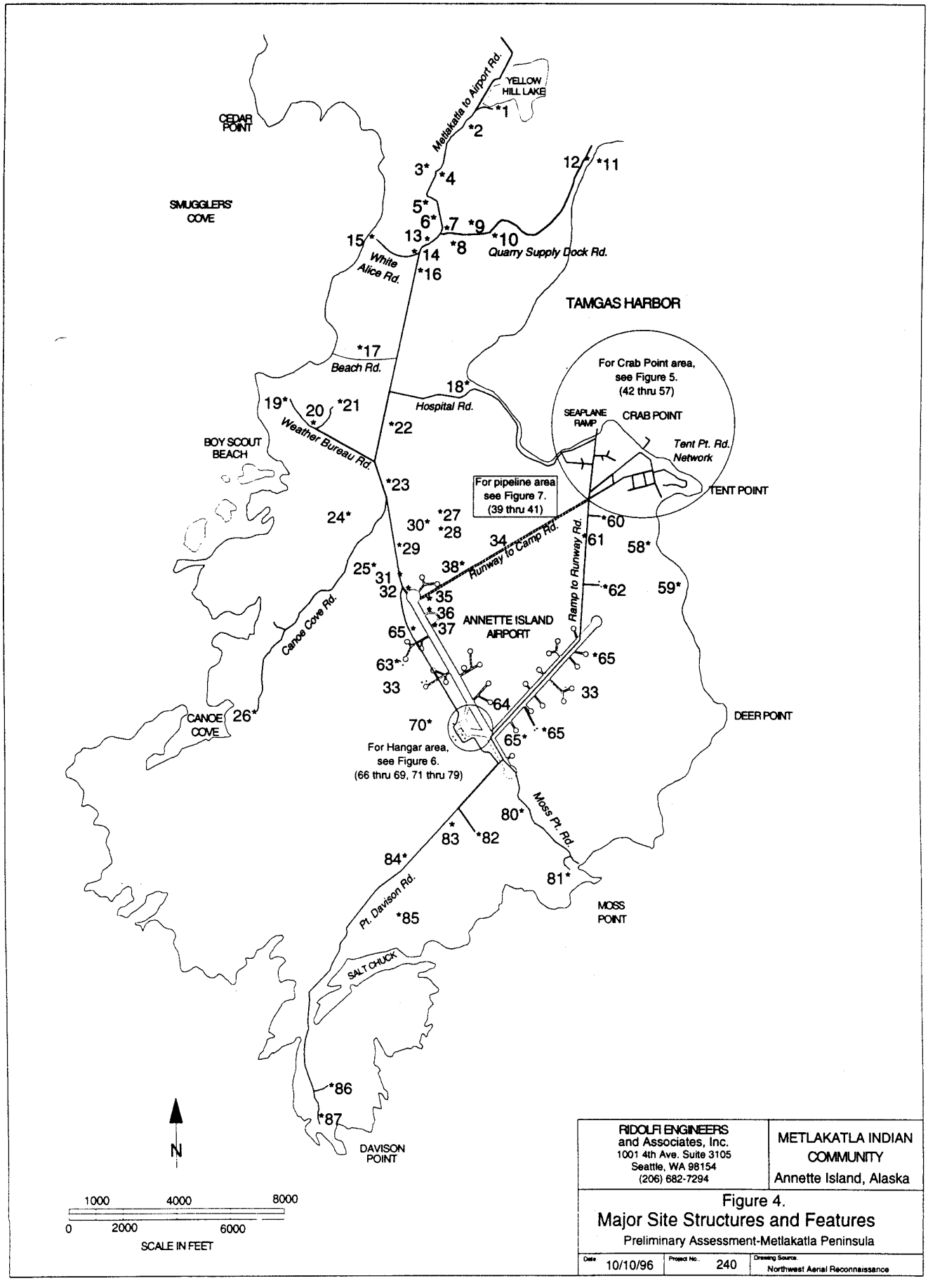
(1) DOD Water Treatment Plant

The remains of the water treatment plant consist of a water intake pump building, a treatment building (see photograph), and a large concrete foundation that formerly held a wood above-ground storage tank (AST).

Free mercury suspected to have originated from treatment plant equipment was reported to have been removed from the ground at the facility (Hudson, 1996).

(2) DOD Engineers Garrison

A plan view of the garrison is depicted in Appendix C. The garrison area was used primarily as living quarters. The garrison site plan did not indicate the presence of



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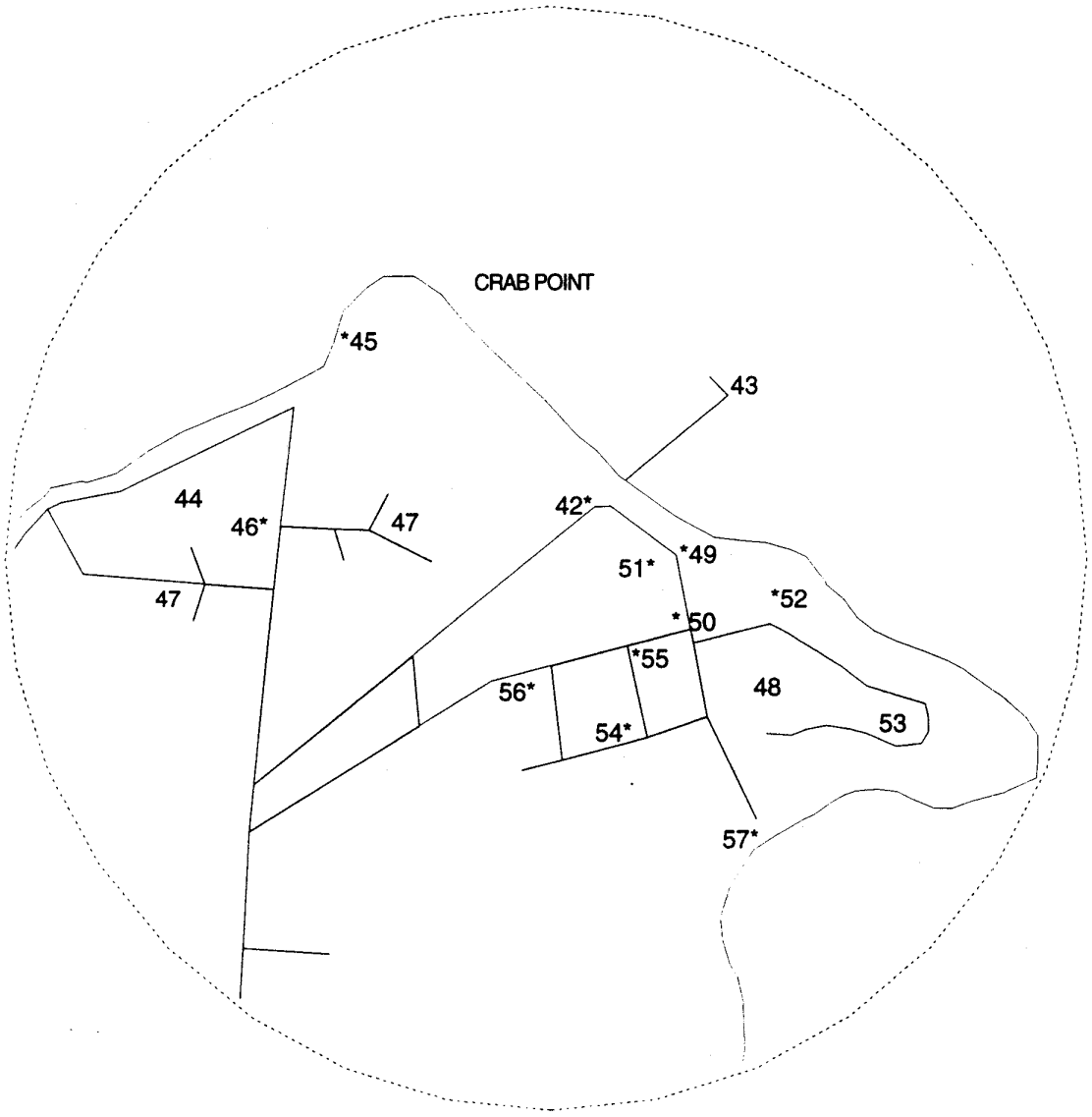
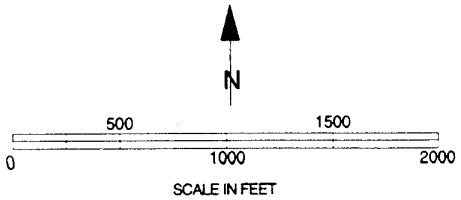
METLAKATLA INDIAN COMMUNITY
Annette Island, Alaska

Figure 4.
Major Site Structures and Features
Preliminary Assessment-Metlakatla Peninsula

Date	Project No.	Drawing Source
10/10/96	240	Northwest Aerial Reconnaissance

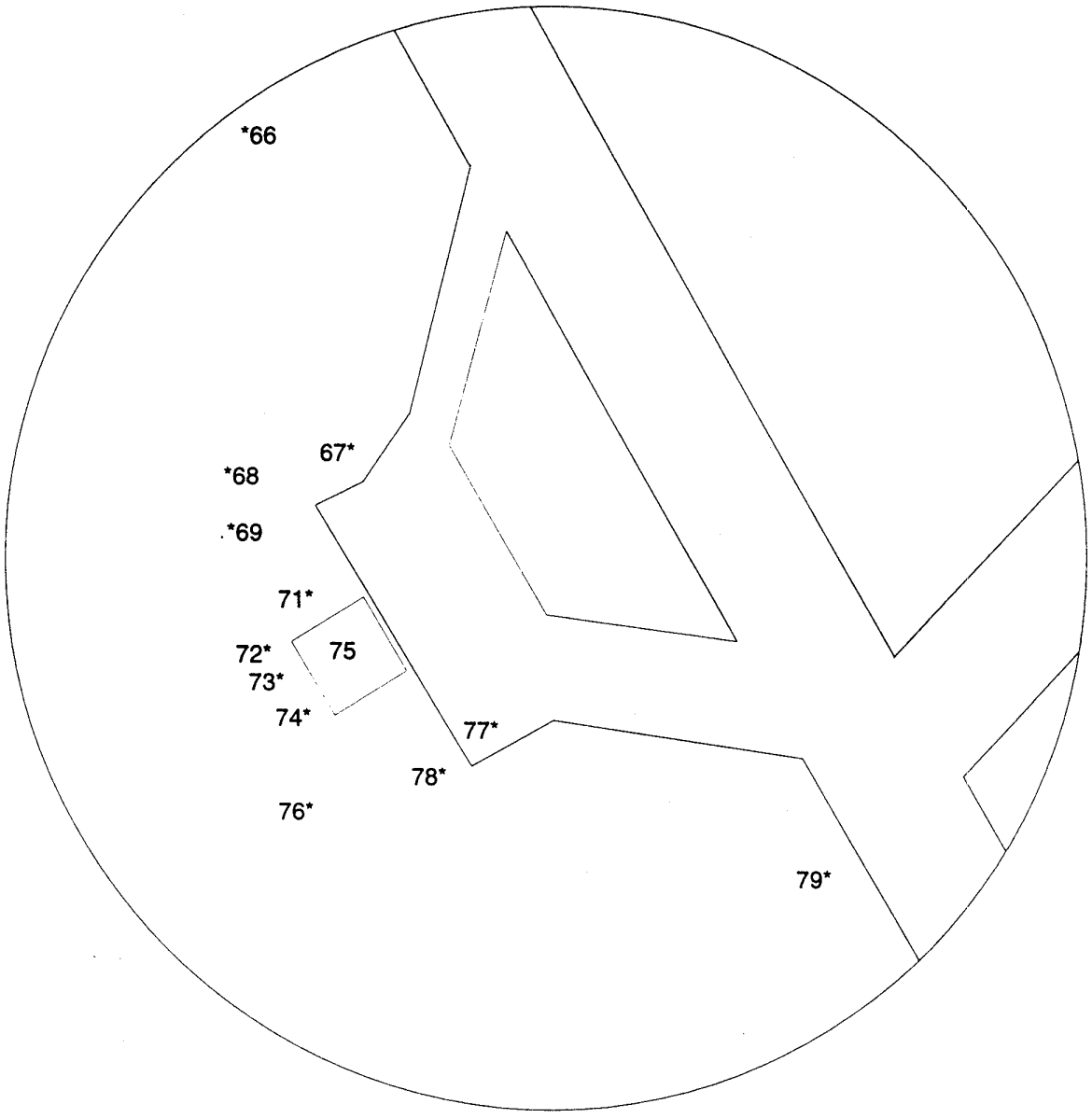




RIDOLFI ENGINEERS and Associates, Inc. 1001 4th Ave. Suite 3105 Seattle, WA 98154 (206) 682-7294	METLAKATLA INDIAN COMMUNITY Annette Island, Alaska

Figure 5.
Crab Point Structures and Features
Preliminary Assessment-Metlakatla Peninsula

Date	Project No.	Drawing Source
10/10/96	240	Northwest Aerial Reconnaissance



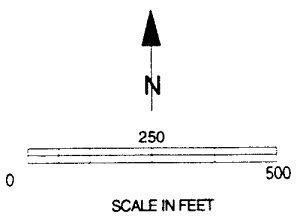


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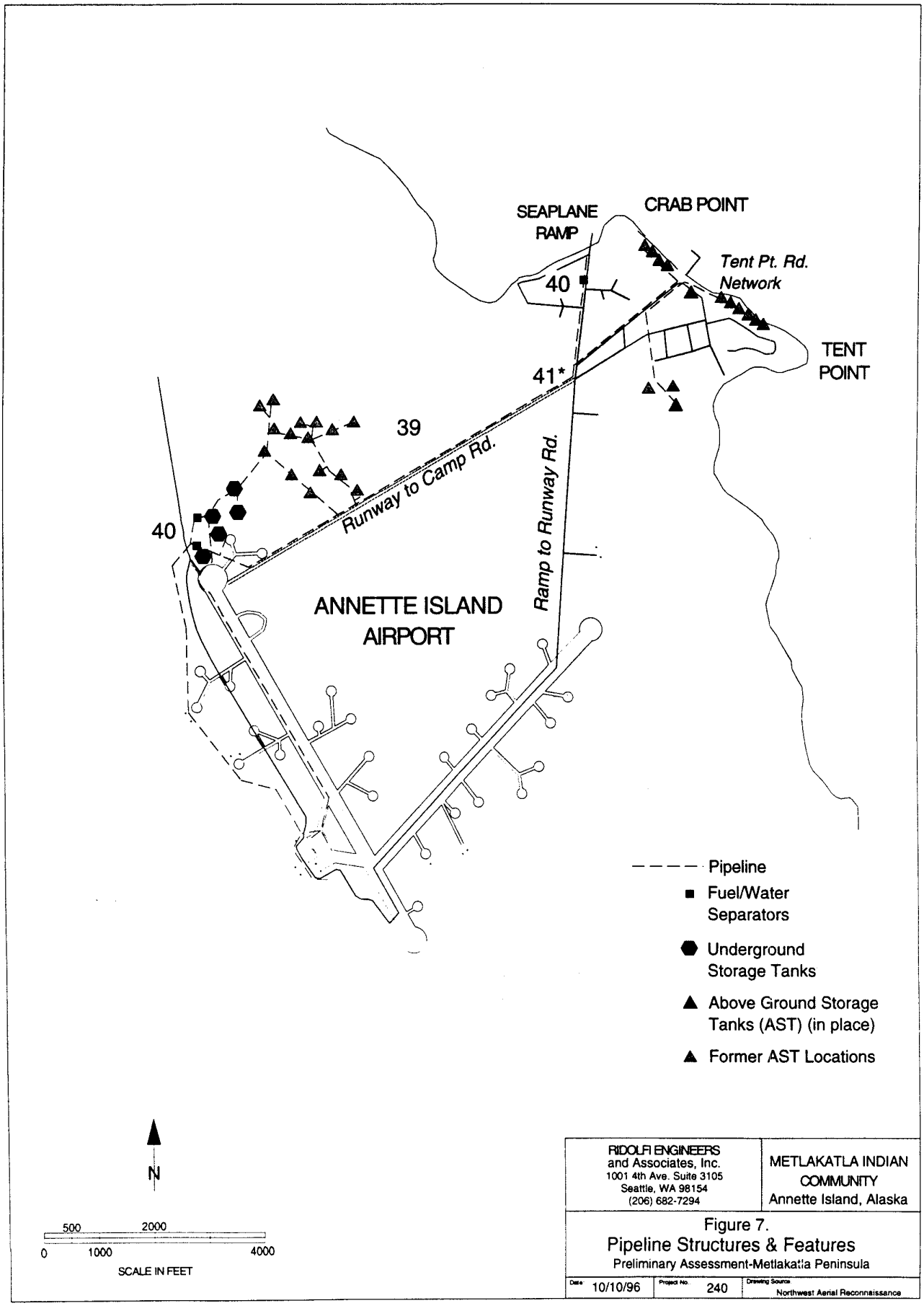
Figure 6.
Hangar Area Structures and Features
Preliminary Assessment-Metlakatla Peninsula

Date	Project No.	Drawing Source
10/10/96	240	Northwest Aerial Reconnaissance



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METLAKATLA INDIAN COMMUNITY
Annette Island, Alaska

Figure 7.
Pipeline Structures & Features
Preliminary Assessment-Metlakatla Peninsula

Date	Project No.	Drawing Source
10/10/96	240	Northwest Aerial Reconnaissance

buildings suspected to be a source of hazardous materials. The remains of the engineer's garrison consist of metal hut frameworks, wood debris, metal debris, metal piping, and a rock fireplace.

(3) DOD 6-Inch Gun Emplacement

The remains of the six-inch gun emplacements consist of two circular concrete gun mounts with protruding bolts.

(4) DOD Quarry

The approximate dimensions of the quarry are 750-foot x 1,000-foot. The quarry was the primary source of rock and gravel fill for the airbase (Hayward, 1996). The floor of the quarry contains a weigh station, rock crushing equipment, abandoned vehicles, and wood debris from abandoned quarry buildings.

(5) Municipal Landfill

The surface dimensions of the landfill are approximately 300 feet x 300 feet. The landfill has been the primary solid waste disposal facility for Metlakatla community members prior to the early 1960s to the present, and lower Metlakatla Peninsula tenants until the mid 1970s.

(6) DOD Shell Storage Bunkers (2)

The remains of each shell bunker consist of wood foundations, wood debris, and metal debris in an open air, surface level bunker created by the explosive excavation of exposed bedrock.

(7) BIA Road Maintenance Center

The operational road maintenance center contains approximately 10 small metal hut housing offices and road maintenance equipment in a 300-foot x 350-foot work area (see photograph). Discarded above ground storage tanks, 55-gallon drums, stained soil, and tar-coated soil were observed. Two USTs are located approximately 250 feet south of the road maintenance center. A layer of tar covers the soil overlying the USTs.

(8) Bark Disposal Fill Area

The surface dimensions of the bark disposal fill area is approximately 400 feet x 800 feet. Sixteen above ground storage tanks and miscellaneous metal debris (see photograph) were observed on top of the fill area.

(9) Power Generation Plant

The remains of the power plant contain one 50-foot x 100-foot metal building in a 200 foot x 300 foot enclosed area. Two ASTs, 55-gallon barrels, machinery, and various debris were observed on the plant grounds. The plant operated from 1966 to 1989 (Dunne, 1996).

(10) Closed Automobile Landfill

The surface dimensions of the closed landfill are approximately 75 foot x 200 foot. The landfill contains numerous 55-gallon drums (see photograph), airplane parts, a truck with doors labeled "U.S. Army" (at bottom of landfill), numerous automobiles, and large metal building construction debris.

(11) DOD Supply Dock

The supply dock was the first dock constructed at the airbase for supplying material to the engineers garrison and quarry. The dock rapidly deteriorated within a few years of its construction because it was constructed with untreated wood (Booth, 1996). A few of the dock pilings are still visible near the shoreline at low tide.

(12) North Tamgas Harbor Tank Farm

The tank farm is a bermed, 50-foot x 100-foot area containing five empty 15,000-gallon ASTs. The tank farm formerly supplied diesel fuel to the power plant (9 above) via an above ground pipeline (Hayward, 1996). The tanks are currently designated for use as spill repositories in a regional hazardous materials spill response plan (Benson, 1996). Soil staining was observed in bermed area.

(13) Abandoned Landfill

The surface dimensions of the landfill are approximately 400 feet x 300 feet. The landfill is permanently closed.

(14) Chlorination Building

The chlorination building is a 10 foot x 20 foot, wood frame structure within a fenced enclosure. The building was constructed in the late 1960s as part of the steel water pipeline system that was built by the FAA to replace the DOD water pipeline that served the lower Metlakatla Peninsula (Dunne, 1996).

(15) White Alice Station

The former White Alice Station consisted of a 50- foot x 350-foot, two-story building (see photograph) and two large metal communication relay receivers. It was constructed by the U.S. Air Force in the late 1950s. The building is currently utilized as offices for Metlakatla Power and Light. Three fuel ASTs, one water AST, three fuel UST fill ports, numerous 55-gallon drums, numerous transformers, batteries, remnants of the White Alice microwave receivers, and a large orange communications tower were observed around the building. Soil staining was observed in proximity to the UST fill pipes, 55-gallon drum storage, and transformers.

(16) Antenna Towers

The remains in the antenna tower area consist of segments of three large orange and white towers, all of which have toppled to the ground (see photograph) and a small wood frame shed. The United States Geological Survey Ketchikan Quadrangle 7.5' Topographic Map (1955) illustrates the historic locations of these three towers.

(17) Beach Access Road

The beach access road is an approximately 2,200 foot road connecting the Metlakatla-Runway Road and Smugglers Cove. The road was built after 1961 and prior to 1973. No development was observed along the roadway or at it terminus at Smugglers Cove.

(18) DOD Main Hospital Area

The hospital site plan is depicted in Appendix C. Buildings suspected to contain hazardous materials included the boiler house, power house, and emergency power house. Due to dense vegetation and deteriorated condition of the structures, identification of the three buildings was not confirmed. Remnants of the hospital consist of metal huts, metal hut frameworks, wood debris, concrete fire walls, concrete foundations, and metal debris such as an uninsulated pressure tanks and an uninsulated boiler. In addition to the hospital related debris, a material disposal area was discovered. The disposal area contains trucks, wood-stave barrels, numerous 55-gallon metal barrels (see photograph) electrical conduit, electrical wire, wire spools, and metal debris. The trucks were DOD vehicles left on the island (Hudson, 1996).

(19) DOD/FAA Non Directional Beacon

The non-directional beacon consists of one large orange and white tower, approximately 120 feet high, in a fenced enclosure and one small building (see photograph). The remains of four additional 100-foot orange towers, all toppled to the ground, are in a square configuration (300 to 400 foot sides) around the existing tower.

A beacon was illustrated at this site on DOD plans. MIC members indicated a beacon was established by the CAA on this site prior to the construction of the airbase (Booth, 1996).

(20) Weather Bureau Housing

The weather bureau housing consists of seven wood frame structures, six residences and one maintenance building (see photograph) constructed in the late 1940s (Dunne, 1996). An above ground heating oil storage tank is located adjacent to each building. Several DOD-vintage metal huts are located southeast of the housing area.

(21) FAA Remote Control Air Ground

The remote control air ground facility (RCAG) has recently been decommissioned (see photograph), and the FAA's lease has been terminated (Benson, 1996). However, the United States Coast Guard has recently leased acreage at the former FAA facility, and established a GIS ground station using the FAA's existing building and three new towers (Benson, 1996). A UST is in place next to the facility building.

(22) DOD AACS Station

The remains of the DOD AACS Station consist of a 20-foot x 60-foot wood floor on pilings, a 30-foot orange and white tower (see photograph), concrete foundations, concrete pits, and felled wood pole antennas. Abandoned electrical equipment is in the crawl space below the wood floor foundation, and remnants of vinyl tiles are on the wood floor.

(23) DOD Alaska Communication Station Transmitter

The remains of the DOD Alaska Communication Station Transmitter consist of concrete posts (possible generator mounts), electrical power poles, and metal hut frameworks.

(24) FAA Middle Marker Facility

The remains of the middle marker facility consist of an 8-foot x 12-foot white wood frame building (see photograph 24a). The building contains abandoned electronic equipment and vinyl tile flooring.

Empty barrels and barrels containing tar residue were observed on the Canoe Cove-Middle Receiver Road at a stream crossing approximately 300 feet northwest of the Canoe Cove Road (see photograph 24b) Tar was observe to have leaked from some of the barrels on to the ground.

(25) FAA Approach Lighting System

The remains of the approach lighting system consists of 29 small orange towers that begin at the middle marker facility and terminate at the north end the main runway (see photograph).

(26) Canoe Cove Garrison

The Canoe Cove garrison plan is depicted in Appendix C. The garrison area was primarily used as living quarters. The garrison plan did not indicate any buildings suspected to have contained hazardous materials. Remains of the Canoe Cove garrison consists of metal hut frameworks, metal debris, wood foundations, and wood debris.

(27) Very High Frequency Omnidirectional Range Tactical Air Navigation

The Very High Frequency Omnidirectional Range Tactical Air Navigation (VORTAC) facility consists of a 30-foot x 30-foot concrete block building, an overhead circular metal grid, a nearby elevated storage platform, and metal hazardous material storage boxes (see photograph). The facility has two USTs and one AST.

(28) DOD Water Tanks

The remains of the DOD water tanks consists of two wooden platforms, wood tank debris, three concrete valve boxes, and sections of 10-inch water pipe.

(29) Directional Finder Antenna

The directional finder antenna is a 15-foot circular, orange antenna (see photograph).

(30) FAA Satellite Station

The FAA recently erected a new facility approximately 1,000 feet southwest of the VORTAC station. The facility consists of a 10-foot x 20-foot metal building and two circular satellite receivers in a fenced enclosure (see photograph). The facility has one AST.

(31) Underground Fuse Magazines

The remains of the underground fuse magazines consist of two excavated underground bunkers covered with steel plate doors (see photograph) located approximately 300 feet apart. The bunkers were recently inspected by the FAA representatives. The northern bunker is empty and the southern bunker contains of cases of dynamite (Benson, 1996).

(32) Short Approach Lighting /Runway Identification Light System

The remains of the short approach lighting /runway identification light system consists of a 5-foot x 10-foot x 5-foot orange metal box on a concrete pad (see photograph).

(33) Landing Field

The landing field consists of two runways. The main runway is paved with asphalt, approximately 7,500 feet in length, and is oriented in a northwest to southeast direction. The second runway ("B" runway) is gravel, approximately 6,000 feet in length, and oriented in a northeast to southwest direction.

Herbicides were periodically applied to the edges of the runways by the FAA to inhibit the growth of vegetation (Wellington, 1996).

(34) DOD Runway to Camp Road

The Runway to Camp Road is an approximately 8,400 foot long and 25-foot wide wood plank road connecting the north end of the main runway and the former DOD construction camp. The roadway was built on pilings and the planks covered with an layer of gravel (see photograph). All sections of the roadway have collapsed.

A undetermined number of empty, orange 55-gallon barrels were observed discarded at the junction of the Runway and the Runway to Camp Road.

(35) Small Tower

A small approximately 15-foot high orange tower (see photograph) is located east of the main runway and south of the Runway to Camp Road.

(36) FAA Glide Slope Facility

The remains of the FAA glide slope facility consists of an 8-foot x 8-foot orange and white wood frame buildings, and a 10-foot orange and white tower (see photograph), both constructed in 1952 (St. John, 1992). The facility contains vinyl tile flooring and abandoned electronic equipment.

(37) FAA Sand Shed/Asphalt Plant

The remains of the FAA metal sand shed consist of charred wood debris, metal, and remnants of a sand pile (see photograph 37a). Sand was imported and used on the runways during icy winter conditions (Dunne, 1996). No asphalt plant building exists although a layer of tar covers the surface of the ground around the former site of the sand shed (see photograph 37b and photograph 37c). Several 55-gallon barrels were

observed resting on the ground, and partially buried 55-gallon barrels were observed around the north and south perimeter of the area leveled for the sand shed/asphalt plant. A 110-foot x 300-foot area west of the sand shed appeared to be a zone of fill material.

(38) DOD Sawmill

The remains of the DOD sawmill consists of a wood foundation, a wood loading platform, and an area of sawdust with surface dimensions of approximately 100-foot x 200-foot. The sawdust-covered area was observed to have very little vegetation.

(39) DOD Fuel Pipeline System

The remains of the DOD pipeline system consist of an estimated 6.8 miles of tar coated, welded, steel pipeline (see photograph 39a). The pipeline system supplied fuel to ASTs along the coast line north (four tanks of unknown capacities) and south (six tanks of unknown capacities) of the dock, an AST (7,000-gallon steel tank) near the dock, ASTs south of the main construction camp (three 80,000-gallon wood tanks), ASTs northeast of the main runway (fifteen 50,000-gallon steel tanks), USTs northeast of the main runway (five 50,000 gallon steel tanks (Booth, 1996)), fueling stations/pits along the runway and in the hangar area, and the USCG seaplane base.

The remains of wood platforms were observed, but all ten ASTs along the coastline have been removed. The 7,000-gallon tank is present on a wood platform (see photograph 39b). Two of the 80,000 gallon tanks (eastern and western tanks) have been dismantled leaving only their foundation, but the third tank is intact (see photograph 39c). A petroleum odor is prominent at all three tank sites. The eastern and western tank sites exhibit zones of distressed vegetation (see photograph 39d), and the most western tank site exhibits a petroleum sheen on pooled water near the tank's foundation and in disturbed bottom sediments in an adjacent flowing stream. The fifteen 50,000 gallon tanks have been removed although concrete saddles and associated tank/pipe connection boxes mark their former locations (see photograph 39e). The five 50,000 gallon underground storage tanks remain in place. A concrete vault is positioned over each of the USTs (see photograph 39f). One fueling pit is located at the north end of the main runway. Other fueling pits may exist near the hangar, but are obscured by cut lumber or wood debris generated by the hangar sawmill operation.

Corrosion pitting was observed in exposed sections of the pipeline system. In several places between the dock and runway, the pipeline was observed to have been severed. Possible soil staining was observed at one locality in the pipeline trench north of the collapsed Runway to Camp Road.

(40) DOD Pipeline Oil/Water Separators

The remains of oil/water separators consist of concrete vaults (see photograph) containing a large tank, metal piping, gauges, and valves.

(41) Tanker Truck Loading Facility

The remains of a tanker loading area (unknown if for fuel or water) consists of a swing arm (see photograph) and associated pipeline valves.

(42) FAA Tank Farm

The FAA tank farm is an unbermed area of approximately 100 feet x 100 feet. The remains of the tank farm consist of a truck tanker fuel loading dock (see photograph 42a), seven 50,000 gallon ASTs (see photograph 42b), two 25,000-gallon ASTs, one 12,000-gallon AST, three 10,000-gallon ASTs (all labeled "Chevron") and associated pipelines. A cleared area approximately 75 feet wide immediately west of the 50,000-gallon ASTs contained an additional eight 50,000-gallon ASTs, which were moved to the electric generating plant in Metlakatla in the late 1980s (Dunne, 1996). Soil in the tank farm area is stained and has a strong petroleum odor. Petroleum sheens were observed on ponded water, and in the tank farm area, and emanating from some tank farm piping.

A small area (less than three feet in diameter) of stained soil was observed in the roadway between the tank farm and dock, and along a northeast sloped 30-foot gravel road leading to the Tamgas Harbor shoreline (see photograph 42c). No petroleum odor was in the soil and no petroleum sheen was observed in Tamgas Harbor. The soil staining appears to be the result of a leak in one of the pipelines coming off the dock.

(43) DOD South Tamgas Harbor Dock

The remains of the South Tamgas Harbor dock consist of a rock filled ramp, an approximately 15-foot wide piling supported pier, and a 50-foot wide loading/unloading dock. Total ramp and dock length is approximately 800 feet (see photograph). Fuel was off loaded via pipelines and cargo by a large dock derrick (Booth, 1996). Portions of the dock have collapsed. The FAA reportedly used Tamgas Harbor to dispose of brass fittings, which were dumped into Tamgas Harbor from the dock (Dunne, 1996).

(44) USCG Housing

Remains of the USCG housing consist of twelve 4000 sf (40 foot x 100 foot) and two larger (40 foot x 150 foot) concrete foundations. All fourteen of the residential buildings were moved off the island when the Coast Guard operations were removed from Annette Island in 1977 (Dunne, 1996). The two large buildings have associated heating oil USTs located in proximity to their respective foundations. The heating fuel source of the other twelve residential sites was a large AST located at the fire station/post exchange building that supplied heating oil (on demand) by gravity (Dunne, 1996).

Segments of a cementitious water line was observed between some of the buildings.

(45) USCG Seaplane Base

Most of the DOD-vintage USCG/Navy seaplane base were removed in the mid 1960s, and replaced by USCG housing. The remains of the seaplane base consists of an approximately 150-foot long, gravel-covered seaplane ramp, wood and metal debris, and several dilapidated wood frame buildings, and metal huts.

(46) USCG Fire Station/Post Exchange

The remains of the fire station/post exchange consists of a 40-foot x 100-foot, single story, cement block building (see photograph). The building replaced a airplane engine

nose hangar and was constructed by the Coast Guard after World War II (Hayward, 1996). The building housed a fire station and the Coast Guard post exchange (Dunne, 1996). A large AST located outside the building gravity-fed heating fuel to twelve residential buildings in the Coast Guard housing area (Dunne, 1996). Roofing debris litters the area immediately north of the building.

(47) USCG Taxiways and Parking Circles

The two USCG amphibious plane taxiways have been converted into roadways. The parking circles contain concrete slabs and electrical hookups for trailers, a DOD-vintage metal hut, a metal storage shed, unidentified metal canisters with pressure locking lids (see photograph), 55-gallon barrels, and miscellaneous debris scattered on the parking circle pads or in adjacent ponds. An old out-of-service "Westinghouse" transformer was found in a standing metal hut resting directly on the hut's concrete slab floor.

(48) Main Construction Camp

The Main Construction Camp garrison site plan is depicted in Appendix C. The majority of DOD buildings that comprised the main construction camp no longer exist. Exceptions include a gasoline station and a fire truck hut, several wood frame buildings and metal huts, and several metal huts located northwest, south and southwest, respectively, of the current FAA housing area. Remains of the former DOD buildings include concrete and wood foundations, wood debris, metal debris roofing, and wood pilings. Eight of the original DOD buildings (orange roofs) in the main construction camp were used by the FAA until the mid 1970s (Dunne, 1996; Aerial, 1973).

The majority of buildings in the main construction camp garrison constructed subsequent to those built by the DOD also no longer exist. These buildings included a public school, a chapel, a recreation hall, and a service building. Remains of these building consist of concrete foundations, and metal and wood debris. Existing buildings include the FAA housing, FAA sewage treatment pond, and the former Pacific Northern Airlines/Western Airlines (PNA/WA) apartment building and the apartment's associated outbuildings.

(49) DOD Gasoline Station

Remains of the DOD gasoline station consist of an approximately 30-foot x 40-foot orange metal building with two petroleum dispensers, and a wood floor (most of which has been removed) built on wood pilings (see photograph). The station was used to fuel vehicles until the mid 1970s (Dunne, 1996). No indications of the presence of USTs (fill ports or tank vents) were observed, and a rudimentary magnetic survey around the station proved inconclusive. A dilapidated trailer was parked immediately north of the station.

A limited area of stained soil with a strong petroleum odor was observed approximately 100 feet north of the gasoline station. Engine parts, metal piping , and miscellaneous metal debris were observed around the perimeter of the gasoline station pad.

(50) DOD/FAA Fire Truck Hut

Remains of the fire truck hut consists of an approximately 20-foot x 80-foot orange metal building with a concrete foundation (see photograph). A fire truck was formerly

housed by the FAA in the northern 70% of the building (Dunne, 1996). A boiler room was present in the south end of the structure. The boiler, still present, was used to keep the building heated and the fire truck operational at all times of year (Dunne, 1996).

(51) FAA Storage Yard

Materials observed in a level, gravel filled, 150-foot x 200-foot area at the northern end of the former DOD construction camp indicated the area was formerly used by the FAA as an equipment storage yard. Airport equipment found at the site, such as a runway sweeper, small crane, passenger ramp, metal portable catwalk, snow plow attachment, welder, etc. were all painted yellow and some labeled "Federal Aeronautics Administration". In addition, three ASTs, one uninsulated pressure tank, steel pipe, insulation used on the FAA water pipeline, metal barricades, remnants of small steel towers, a limited number of empty 55-gallon barrels, other miscellaneous equipment, and a trailer containing electrical equipment were observed (see photograph).

(52) Water Treatment Pond

An approximately 100-foot x 100-foot treatment pond has been used to aerate sewage generated at the FAA housing area.

(53) FAA Housing Area

The FAA housing area consists of nine two-story, 30-ft x 50-foot, wood frame structures (see photograph). One of the buildings houses the MIC forestry and fisheries departments, three are used as residences by MIC members, and five are vacant. All the buildings have a heating oil UST (out-of-service) and vinyl tile flooring. A total of twelve heating oil ASTs are located adjacent to the occupied buildings, and one AST is located adjacent to one of the five vacant buildings.

(54) Public School

The remains of the public school consist of a "z"-shaped concrete foundation, a small concrete boiler room (see photograph 54a), metal piping, metal structural steel, and metal building debris. The boiler room contains an insulated boiler and insulated piping. The debris contains vinyl floor tile, another insulated boiler, and pipe insulation (see photograph 54b).

(55) Service Building

The remains of the service building consist of a concrete foundation and building debris. The concrete foundation contains a hydraulic floor hoist and a trench (see photograph).

(56) Pacific Northern/Western Airlines Residential Building

The approximately 50-foot x 100-foot structure (see photograph) was formerly an apartment building constructed for PNA/WA employees (Wellington, 1996). It is currently occupied as residences by MIC members. The building is a two-story structure, with wood and cementitious exterior wall, and a heating oil AST. Several medium to large rectangular buildings (material storage and livestock pens) are located southwest of the apartment structure. Four out-of-service ASTs, wood debris from a small sawmill operation, and a large fireplace are located south of the building .

(57) DOD Administration Building

The remains of the DOD administration building consists of one 5-foot x 5-foot concrete structure, speculated to have been a security vault in the building. The Coast Guard had a social club in the building (Dunne, 1996).

(58) DOD Utility Officer Buildings

The DOD utility officer building site plan is depicted in Appendix C. The area in which the buildings were located was primarily used for utility work activities. All the buildings in the site plan were suspected to have contained hazardous materials. The Beach Road in the site plan is overgrown with thick vegetation and fallen trees, and is barely recognizable as a former roadway. Due to the dense vegetation and the deteriorated condition of the structures, identification of the target buildings was not confirmed with a high degree of confidence. However, no obvious hazardous materials were detected during the site reconnaissance. The remains of the utility building offices consist of collapsed wood frame structures, wood foundations, wood pilings, a small concrete building, an outhouse, and wood and metal debris.

(59) DOD Air Warning Center Garrison

The DOD air warning center garrison location map is depicted in Appendix C, however a detailed site plan was not available. The purpose of the garrison was to man the base's air warning center. Due to the dense vegetation and the deteriorated condition of the structures, identification of buildings was difficult. The remains of the air warning center garrison consist of wood foundations, wood pilings, wood pole antennas, stacked metal frameworks, a wood boardwalk, and wood and metal debris.

(60) Receiver Station

The remains of the receiver station consist of three metal hut frameworks, one containing a possible generator mount, and an 80-foot wood antenna pole.

(61) 71st Garrison

The Canadian Light Antiaircraft and Airdrome Defense (71st) Garrison site plan is depicted in Appendix C. Two of three garrison camp areas were primarily used as living quarters. The third area contained Bren Gun carrier pads. The remains of the garrison consist of one intact metal hut with remnants of olive drab exterior paint, metal frameworks, metal siding/roofing, wood foundations, wood debris, and wood pilings.

Drums containing transformer dielectric fluid were reportedly buried by the FAA off the spur road leading to the mess hall. The drums numbered less than a dozen and were buried 4 to 5 feet below the ground surface in the late 1960s (Dunne, 1996).

(62) DOD Power House

The remains of the DOD power house consist of a 30-foot x 40 -foot structure wood frame structure. The building contains a concrete foundation that accommodated five to six electric generators. Two concrete saddles were observed in close proximity to the building.

(63) DOD /FAA Remote Receiver Station

The remains of the remote receiver station consist of a single-story, 20-foot x 30-foot concrete block building, and a small orange and white 20-foot tower (see photograph). The building contains abandoned electronic equipment and vinyl tile flooring. A toppled orange and white tower is located immediately north of the building. The station pad is bordered by ponded water. The perimeter embankments and near shore pond areas are littered with apparent station-related debris (fuses, electrical conduit, a metal console, and building materials).

(64) DOD Runway Taxiways and Parking Circles

The majority of the parking areas adjacent to the two runways contain remains of wood foundations from pilot huts. However, some of circles contain cut lumber debris, empty 55-gallon barrels, and tar-filled 55-gallon barrels some of which were observed to be leaking tar onto the ground surface. Surface gravels have been excavated from several of the taxiways and parking circles.

"USN" (see photograph 64a), "US Navy", and "US Army" (see photograph 64b) were observed stamped on some drums.

(65) Runway Fortifications

The remains of runway fortifications consist of "v" or "w" shaped wood-lined trenches, concrete pillars, raised piping, and earthen bunkers.

(66) High Intensity Light

The remains of a high intensity, vertically oriented runway light consists of a small light fixture and electrical conduit pipes.

(67) Weather Station

The weather station contains two structures: a 20-foot x 30-foot single story , wood frame office building and a 20-foot x 20-foot, domed, wood frame weather balloon release building. An instrument gauging area is located between the two buildings (see photograph 67a). The office has a heating-oil AST adjacent to the west side of the building.

An estimated dozen partially buried metal drums (see photograph 67b) are visible in the sloped embankment immediately north of the weather bureau buildings (Hudson, 1996).

(68) USCG Water Treatment Plant

The remains of the USCG sewage treatment plant consists of a 20-foot x 30-foot wood frame building (see photograph). The building contains empty aluminum vats and a control panel room. The building has cementitious exterior siding and interior walls.

(69) USCG Quarters

The remains of the Coast Guard quarters consist of a two-story, "t"-shaped building (see photograph) that is divided into individual living units and shared lavatories. The building has a boiler room containing an insulated boiler, water tank and piping, vinyl tile flooring, and cementitious exterior siding.

A small metal building containing what appeared to be a waste (paper) incinerator is located near the quarters building. The building also contains four partially filled unlabeled 55-gallon barrels.

(70) DOD Beacon Tower

The remains of the DOD beacon is an approximately 50-foot orange and white metal tower (see photograph).

(71) USCG Garage

The garage is a 40-foot x 100-foot metal building. The structure was primarily used by the Coast Guard as an office building, not a garage (Dunne, 1996). The building is currently being used by the MIC sawmill operation to store spare parts, barrels of lubricants and other petroleum-related products, and to perform minor maintenance on sawmill equipment and vehicles.

A small miscellaneous equipment storage yard is located northwest of the garage. The storage yard contains one AST.

(72) Hangar Boiler Building

The boiler building (see photograph) is approximately 30 feet x 30 feet x 15 feet and contains two insulated boilers and associated insulated piping.

(73) Boiler Building AST

One 4,000-gallon AST is located south of the hangar boiler building (see photograph). The tank supplied fuel to the boilers in the adjacent building.

Soil staining was observed around the UST.

(74) USCG ASTs

The USCG ASTs are two 10,000-gallon tanks with a fuel loading swing nozzle positioned on elevated metal tank stands (see photograph). The ASTs stored fuel used in USCG flight operations (Wellington, A., 1996).

Soil staining was observed under the ASTs.

(75) Hangar

The hangar consists of a 160-foot x 200-foot x 30-foot steel frame structure (see photograph) which at the time of construction also had a metal roof and metal exterior siding (Hayward, 1996). The majority of the building is an open bay entered by sliding

doors on the north side of the building. The northern and southern 20 feet of the building have first and second floor rooms configured as offices which have in the past been used by the FAA, Coast Guard, Postal Service, and Weather Bureau (Wellington, A., 1996). The building has insulated steam heat pipes, interior cementitious interior walls, cementitious exterior siding; and vinyl tile flooring is found in the office areas.

The building contains an automobile hoist. Thirteen transformers were observed stored in a first floor room on the south side of the building. The transformers were directly on the concrete slab floor, and all had a "non PCB" label prominently displayed. The bay portion of the hangar currently houses a saw and wood sorting tables. The saw mill is operated by MIC members and is produces thick dimension lumber. The mill operation has a 6,000-gallon AST positioned on the ground surface at the northwest corner of the hangar, and a diesel fueled sawdust burning stack at the southwest corner of the hangar. A stack of out-of-service fluorescent lights, and other miscellaneous debris is located along the north side of the hangar.

(76) Trailer

The trailer is a new 20-foot x 60-foot x 8-foot metal structure which has been and set up southwest of the hangar.

The location of the trailer is approximately over or slightly to the west of a former gasoline service station operated by Standard Oil (Wellington, A., 1996).

(77) Pacific Northern/Western Airlines Terminal

The remains of the Pacific Northern/Western Airlines airline terminal consists of a 40-foot x 100-foot, single story, wood frame building (see photograph). The building has a garage (eastern 5% of building) which contains two ASTs, and a former combination passenger lounge, food service and ticketing area. The terminal building contains vinyl tile flooring. Several partially filled unlabeled 55-gallon barrels were observed on the south side of the building.

A third AST used by the airlines to fuel vehicles and ground equipment was located southeast of the terminal (Wellington, A., 1996).

(78) DOD Air Traffic Control Tower

The remains of the air traffic control tower consists of an approximately 40-foot orange and white steel tower with a catwalk near its apex (see photograph).

(79) Log Storage Yard

The current hangar sawmill operation stores logs in an open 300-foot x 400-foot area southeast of the hangar (see photograph). This area is reported to have been filled with discarded 55-gallon tar drums (Dunne, 1996) and asphalt (Wellington, A., 1996).

(80) Localizer

The remains of the localizer consist of a 12-foot x 18-foot orange and white wood frame building (see photograph 80a). The facility was constructed in 1952 (St. John, 1992) and contains abandoned electronic equipment, and vinyl tile flooring.

The remains of a 60-foot wide orange steel tower was located 300 feet east of the localizer (see photograph 80b).

(81) Moss Point Garrison

The Moss Point garrison site plan is depicted in Appendix C. The garrison area was primarily used as living quarters. The garrison site plan did not indicate any buildings suspected to have contained hazardous materials. Remains of the Moss Point Cove garrison consists of metal hut frameworks, metal siding/roofing, wood foundations, and wood debris.

(82) Winnipeg Garrison/Annette Inn

The Winnipeg garrison site plan is depicted in Appendix C. The garrison area was primarily used as living quarters. After the war, Pan American Airways upgraded some the garrison buildings for residential quarters for their employees and passengers in transit (Wellington, A., 1996). The upgraded buildings had rolled or vinyl tile flooring, framed in rooms, insulation, woodwork, and painted interior ceilings and walls (see photograph). Other buildings in the camp were allowed to deteriorate. The remains of these and other buildings consist of collapsed and erect metal huts and wood frame buildings, wood and concrete foundations, wood debris, wood pilings, and miscellaneous discarded materials. A boiler building exists and contains an insulated boiler with wrapped, insulated steam piping that connects to adjoining buildings.

(83) Annette Inn Auxiliary Area

Remains of an area designated the Annette Inn auxiliary area consist of a wood foundation, metal and wood debris, electrical conduit, water pipe, and a AST.

(84) Tokio Garrison

The Tokio garrison site plan is depicted in Appendix C. The garrison area was primarily used as living quarters. The garrison plan contained one building and a garage, the location of which was investigated, and found not to have any visible hazardous materials. The remains of the Tokio garrison consists of metal hut frameworks, metal siding/roofing, wood foundations, and wood debris.

(85) Microwave Receiver Station

The remains of the microwave receiver station consists of a 60-foot x 30-foot x 15-foot, cement block building, two 60-feet wide and 60-feet tall, microwave receivers (see photograph), a small emergency generator building, small wood frame buildings, small metal buildings, numerous concrete foundations (indicating the former presence of a residential living quarters area), a 30-foot cylindrical tower in front of each receiver, and miscellaneous debris including sections of a orange and white antenna tower. The station building has cementitious interior walls, vinyl tile flooring, eight unlabeled bottles of gas located on outside north wall, abandoned electronic equipment, a small circular communications disk on the roof, and is serviced by three platform mounted electrical transformers. The receivers are made of galvanized steel and are painted grey. An AST and an out-of-service electric transformer resting directly on the ground were observed in the residential housing area. Stained soil was observed adjacent to the AST.

The station was thought to have been another U. S. Air Force White Alice Station, and in the early 1970s the operation of the facility was turned over to the telephone company (either Alaska Telephone Corporation or General Telephone) (Wellington, A., 1996 and Dunne, 1996).

(86) Satellite Tracking Station

The remains of the satellite tracking station consists of a 10-foot x 10-foot x 8-foot concrete building with a 20-foot diameter circular top that contains four 4-inch diameter conduit pipes, a concrete pad, and several felled telephone poles. A similar structure had been installed in one of the gun turrets at Point Davison.

(87) Point Davison Garrison

The Point Davison garrison site plan is depicted in Appendix C. The purpose of the garrison was to man coastal guns. Structures suspected to contain hazardous materials include a power house, fuel tank, and metal huts for storing ammunition for the coastal guns. Due to dense vegetation and the deteriorated condition of the structures, identification of the target buildings was not always confirmed with a high degree of confidence. However, no obvious hazardous materials were detected during the site reconnaissance. The remains of the garrison consist of four circular gun mounts, ammunitions storage boxes adjacent to guns, a wood pole search light tower, a large pile of barbed wire, erect and collapsed metal huts and wood frame buildings, wood foundations, and wood and metal debris .

5.2 AREAS OF POTENTIAL CONCERN

Table 1 provides a summary of the major site structures and features which were inventoried and described in Section 5.1. Environmental concerns related to each location are noted.

Table 1. Summary of the major site structures and features.

SITE LOCATION/FEATURE	UST*	AST*	LBP*	ACM*	Spill	Disposal	Barrels	Other**
1 Water Treatment Plant		X						
2 Engineer Garrison								
3 6-inch Guns								
4 Quarry								
5 Municipal Landfill						X		
6 Shell Storage Bunker (2)								
7 BIA Road Maintenance Center	X	X	X	x	X			
8 Bark Disposal Fill Area		X				X		
9 Power Generation Plant		X			X	X	X	T,E
10 Closed Automobile Landfill			X			X	X	
11 Supply Dock								
12 North Tamgas Harbor Tank Farm		X			X			
13 Abandoned Landfill						X		
14 Chlorination Building			x	x				
15 White Alice Station	X	X	X	x	X		X	T,E
16 Antenna Towers			X					

SITE LOCATION/FEATURE	UST*	AST*	LBP*	ACM*	Spill	Disposal	Barrels	Other**
17 Beach Access Road								
18 Main Hospital Area						X	X	
19 Non Directional Beacon	X-r		X					
20 Weather Bureau Housing		X	X	x				
21 Remote Control Air Ground	X		X	x				
22 AACS Station			X	X				E
23 ACS Transmitter								
24 Middle Marker Facility			X	X	X		X	E
25 Approach Lighting System			X					
26 Canoe Cove Garrison	x							
27 VORTAC Facility	X	X	X	x				
28 Water Tanks		X						
29 Directional Finder Antenna			X					
30 Satellite Station		X						
31 Underground Fuse Magazines								O
32 SALSR			X					
33 Landing Field								H
34 Runway to Camp Road							X	
35 Small Tower			X					
36 Glide Slope Facility			X	X				E
37 Sand Shed/Asphalt Plant			X		X		X	
38 Sawmill								
39 Fuel Pipeline System	X	X			X			
40 Pipeline Oil/Water Separators	X							
41 Tanker Truck Loading Facility					X			
42 FAA Tank Farm		X	X		X			
43 South Tamgas Harbor Dock						X		
44 USCG Housing	X			X				
45 USCG Seaplane Base						x		
46 USCG Fire Station/Post Exchange		X	X	X	·			
47 USCG Taxiways and Parking Circles								T
48 Main Construction Camp			X	X				
49 Gasoline Station	X		X		X			
50 Fire Truck Hut			X	X				
51 FAA Storage Yard		X				X		E
52 Water Treatment Pond								
53 FAA Housing Area	X	X	X	X				
54 Public School			X	X				
55 Service Building	X							
56 PNA/WA Residential Building		X	X	X				
57 Administration Building								
58 Utility Officer Buildings								
59 Air Warning Center Garrison								
60 Receiver Station								

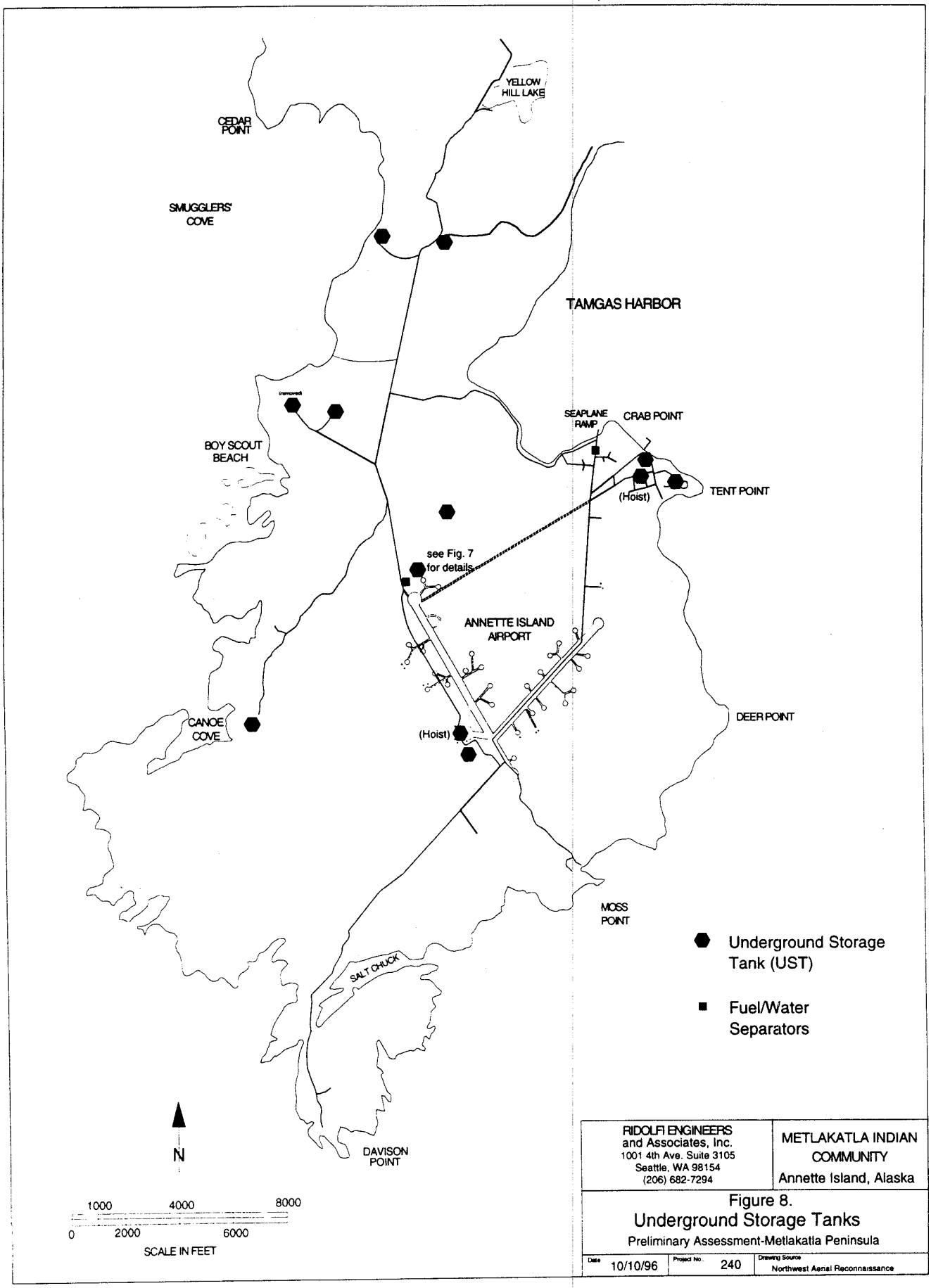
SITE LOCATION/FEATURE	UST*	AST*	LBP*	ACM*	Spill	Disposal	Barrels	Other**
61 71st Garrison							X	
62 Power House		X						
63 Remote Receiver Station			X	X				E
64 Runway Taxiways & Parking Circles		X			X		X	
65 Runway Fortifications								B
66 High Intensity Light								
67 Weather Bureau Station		X	X	x			X	
68 USCG Water Treatment Plant				X				
69 USCG Quarters			X	X				
70 Beacon Tower			X					
71 USCG Garage		X						
72 Hangar Boiler Building			X	X				
73 Boiler Building AST		X	X		X			
74 USCG ASTs		X	X					
75 Hangar	X	X	X	X	X			T
76 Trailer	X							
77 PNA/WA Terminal		X	X	X				
78 Air Traffic Control Tower			X					
79 Log Storage Yard						X	X	
80 Localizer			X	X				E
81 Moss Point Garrison								
82 Winnipeg Garrison/Annette Inn		X	X	X				
83 Annette Inn Auxiliary Area		X						
84 Tokio Garrison								
85 Microwave Receiver Station		X	X	X	X			T, E
86 Satellite Tracking Station			X					
87 Point Davison Garrison								B

x = Buildings not entered; likely to contain ACM or other concerns as noted.
r = removed
* UST = underground storage tank
AST = above ground storage tank
LBP = lead-based paint
ACM = asbestos containing material
** E-Electronic Equip., T-Transformer, O-Explosives, H-Herbicides, B-Bunkers

5.2.1 Underground Storage Tanks (UST)

Figure 8 shows the location of USTs at the project site. USTs ranging from an estimated 300 gallons to 50,000 gallons in size were confirmed in place at the following locations:

South of the BIA Road Maintenance Center (7)
White Alice Station (15)
Remote Control Air Ground (RCAG) Facility (21)
USCG Housing (44)
VORTAC Facility (27)
FAA Housing Area (53)
Tactical Fueling Area (part of 39)


YELLOW HILL LAKE
CEDAR POINT
SMUGGLERS' COVE
TAMGAS HARBOR
SEAPLANE RAMP
CRAB POINT
BOY SCOUT BEACH
(Hoist)
TENT POINT
see Fig. 7 for details
ANNETTE ISLAND AIRPORT
CANOE COVE
(Hoist)
DEER POINT
MOSS POINT
SALT CHUCK
DAVISON POINT
N
1000
4000
8000
0
2000
6000
SCALE IN FEET
Underground Storage Tank (UST)
Fuel/Water Separators
RIDOLFI ENGINEERS and Associates, Inc.
1001 4th Ave. Suite 3105
Seattle, WA 98154
(206) 682-7294
METLAKATLA INDIAN COMMUNITY
Annette Island, Alaska
Figure 8.
Underground Storage Tanks
Preliminary Assessment-Metlakatla Peninsula
Date 10/10/96
Project No. 240
Drawing Source Northwest Aerial Reconnaissance

Fuel USTs are suspected be in place at the DOD/FAA gasoline station in the Main Construction Camp area and at a former Standard Oil gasoline service station southwest of the hangar. Hydraulic oil USTs are suspected to be in place at a hydraulic hoist in the hangar and at a former service center near the Main Construction Camp area. None of the USTs appeared to have been permanently decommissioned by in-place closure.

5.2.2 Above Ground Storage Tanks (AST)

ASTs ranging from an estimated 300 gallons to 80,000 gallons in size were confirmed at numerous locations on the project site (refer to Figure 9). A limited number of concrete tank saddles indicated the former presence of other ASTs. Small sized ASTs were found randomly discarded throughout the project site, and adjacent to buildings to which they supplied heating oil. Large-size in-place, but out of service, ASTs were located at the FAA tank farm and a DOD tank farm south of the Main Construction Camp. Areas of distressed vegetation, petroleum odor, and sheening on pooled water were noted in proximity to these tanks.

5.2.3 Lead-Based Paint (LBP)

Previous environmental investigations confirmed the presence of lead in soil at two FAA facilities: the VORTAC (27) and the Non-Directional Beacon (19). LBP is suspected to have been used on the majority of the painted exteriors of DOD and FAA buildings and communication/navigation facilities. Figure 10 shows the locations of suspected LBP.

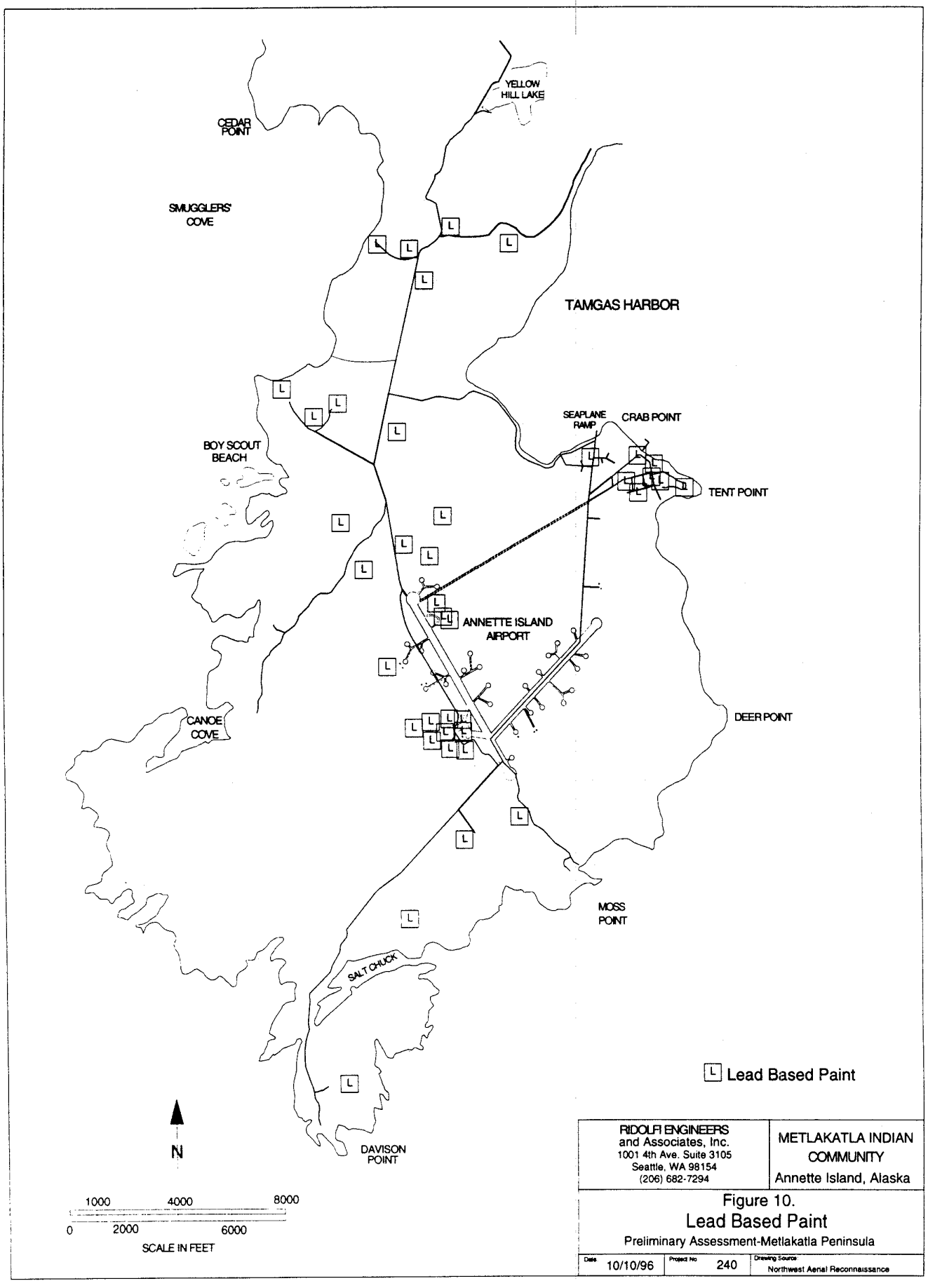
5.2.4 Asbestos-Containing Materials (ACM)

A previous environmental investigation confirmed the presence of asbestos in thermal insulation from a steam boiler. ACM such as thermal insulation, exterior and interior siding, roofing material, and vinyl flooring is suspected to have been used in the many of the existing DOD and FAA buildings and communication/navigation facilities. Refer to Figure 11 for the locations of concern for ACM.

5.2.5 Contaminated Soil/Spills

Previous environmental investigations confirmed the presence of soil containing PCBs in and around the northwest corner of the hangar, petroleum hydrocarbon impacted soil at the FAA Tank Farm (42) and beneath USTs west of the Hangar (75), and tar impacted soil at the former Sand Shed/Asphalt Plant (37).

Figure 12 shows the locations of suspected contaminated soil and spills. Tar contaminated soil was noted at an area south of the BIA Road Maintenance Center (7) and at several other locations associated with the disposal of tar barrels. Areas of suspected petroleum hydrocarbon impacted soil were observed at the North Tamgas Harbor Tank Farm (12), the White Alice Station (15), north of the DOD Gasoline Station (49), the DOD tank farm south of the Main Construction Camp (48), at various points along the Fuel Pipeline System (39), and at the Microwave Receiver Station near Point Davison (85).



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Annette Island, Alaska

Figure 10.
Lead Based Paint
Preliminary Assessment-Metlakatla Peninsula

Date	Project No	Drawing Source
10/10/96	240	Northwest Aerial Reconnaissance

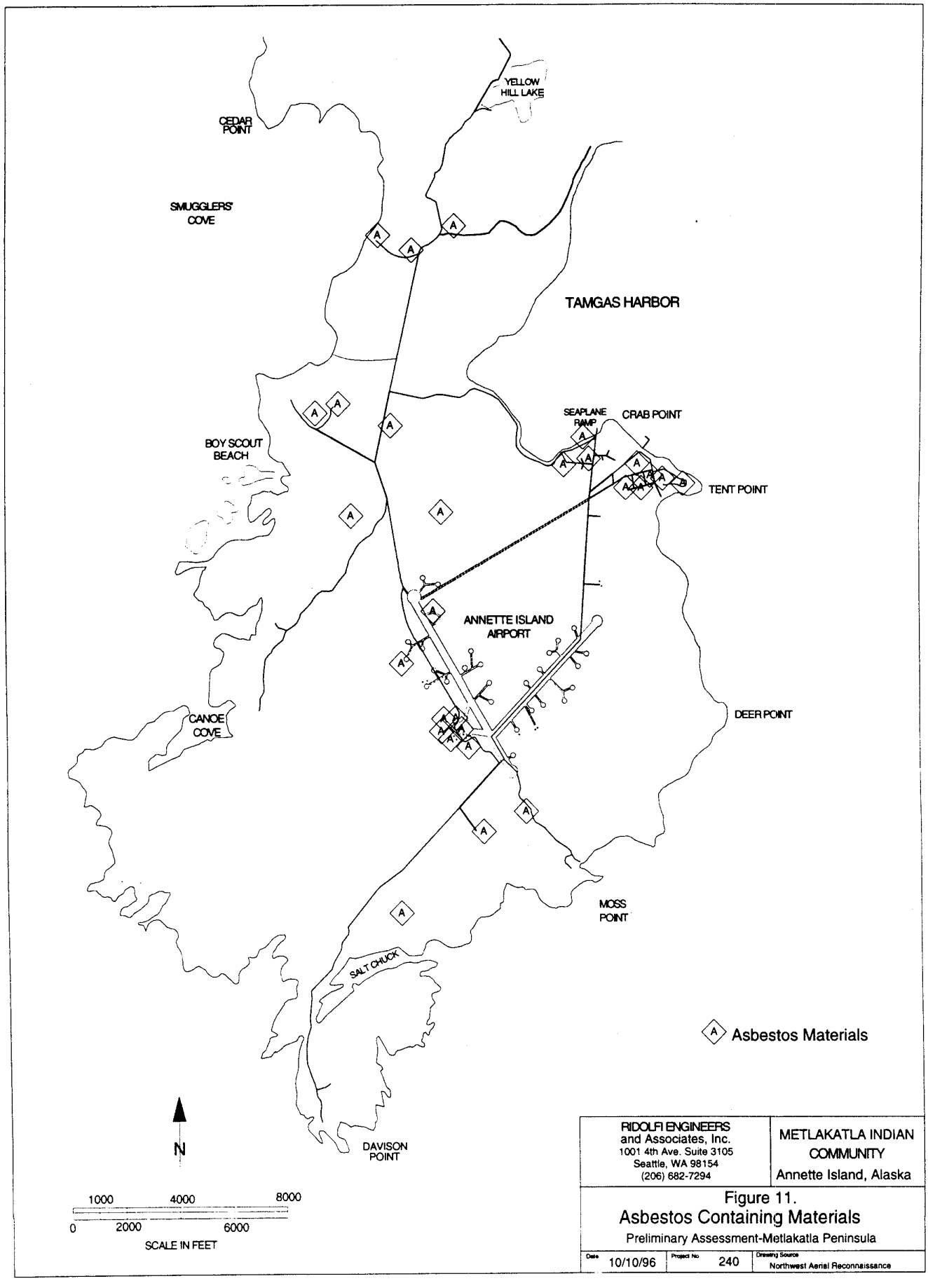

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Figure 11.
Asbestos Containing Materials
Preliminary Assessment-Metlakatla Peninsula

Date	Project No	Drawing Source
10/10/96	240	Northwest Aerial Reconnaissance

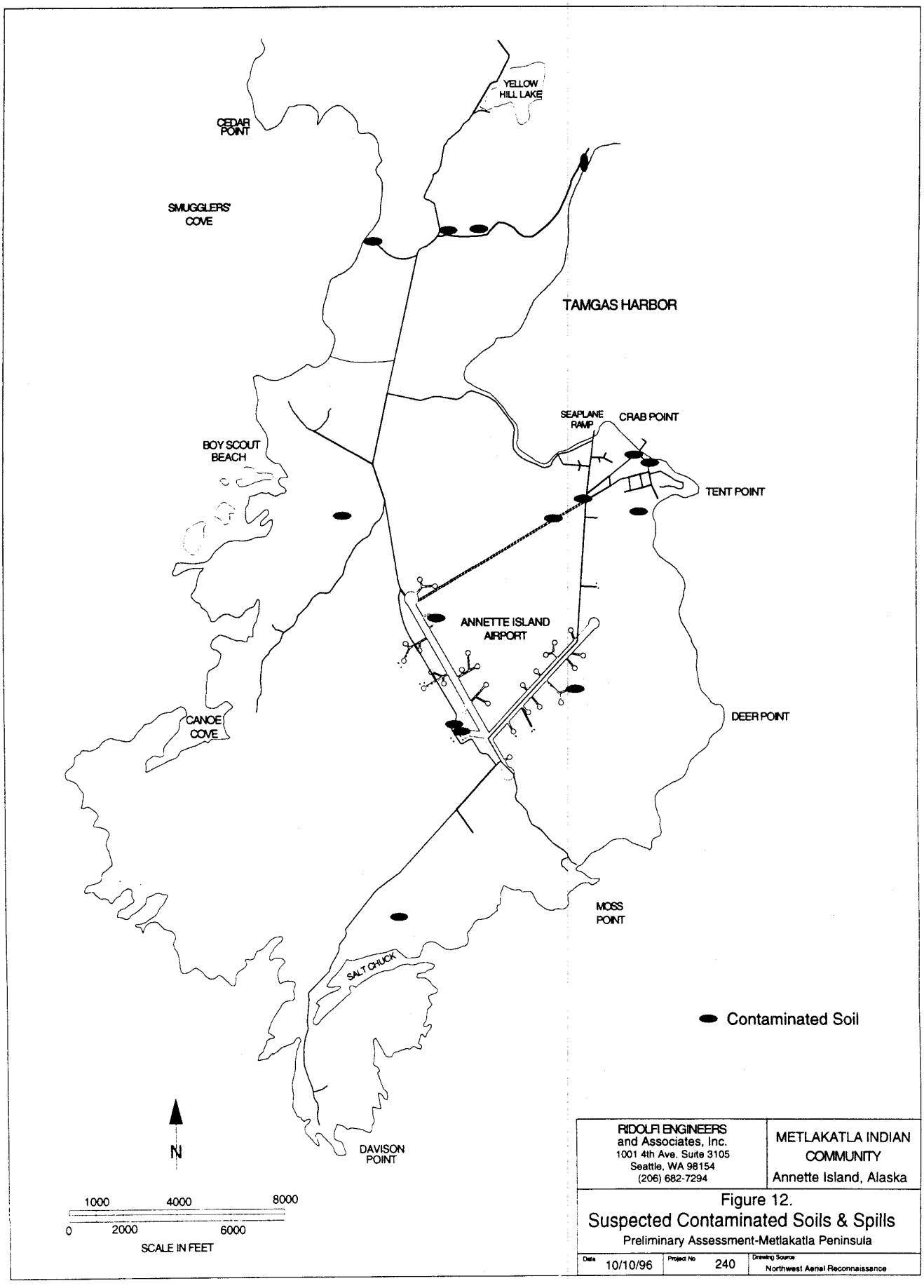

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Figure 12.
Suspected Contaminated Soils & Spills
Preliminary Assessment-Metlakatla Peninsula

Date	Project No	Drawing Source
10/10/96	240	Northwest Aerial Reconnaissance

5.2.6 Disposal

Figure 13 shows the location of disposal areas. Four landfills were noted in proximity to the junction of the Metlakatla-Airport Road and the Supply Dock Road (5,8,10,13).

Equipment disposal areas were noted at the FAA storage yard, and at the Hospital area. Suspected disposal sites include the South Tamgas Harbor Dock (43), and a filled area currently being used as a Log Storage Yard (79).

5.2.7 Barrels

Abandoned barrels of various sizes, but predominately 55-gallon size, were noted throughout the project area. Locations containing 25 or more barrels are denoted on Table 1. Figure 14 shows the locations of barrels at the site. The majority of barrels observed were empty and highly corroded. Full or partially full barrels containing tar were noted at several of the barrel dumps. Partially buried barrels were noted along the perimeter of the former Sand Shed/Asphalt Plant (37), and in the embankment north of the weather station. Areas suspected to contain buried barrels include the Sand Shed/Asphalt Plant (37), the Log Storage Yard (79), and the 71st Garrison Area (61).

5.2.8 Other

Figure 15 shows the location of other areas of concern. Transformers were confirmed at three locations at the project site. At the Microwave Receiver Station (85), three transformers were found on an elevated platform adjacent to the station, and one transformer was found discarded on the ground in associated housing area. At a USCG Parking Circle, one transformer was found in a metal hut. At the Hangar (75), thirteen transformers all labeled "non PCB" in a room on the south side of the hangar.

Abandoned Electronic Equipment was confirmed in the following buildings:

AACS Station (in crawl space) (22)
Middle Marker Facility (24)
Glide Slope Facility (36)
Remote Receiver Station (63)
Localizer (80)
Microwave Receiver Station (85) near Point Davison
Trailer in the FAA Storage Yard (51)

Dynamite was recently reported to have been found in one of two underground fuse magazines. Runway fortifications consisting of trenches and suspected bunkers were noted at five locations adjacent to the runways. Historical use of the bunkers was not ascertained.

6.0 RECENTLY IMPLEMENTED, PLANNED, AND PROPOSED CLEANUP ACTIONS

Since 1993, the FAA has conducted various removal actions at the project site; the documentation related to these activities is summarized below. In addition, the FAA has plans to pump petroleum products from some tanks and remove contaminated concrete flooring from areas in the Hangar (Benson, 1996).

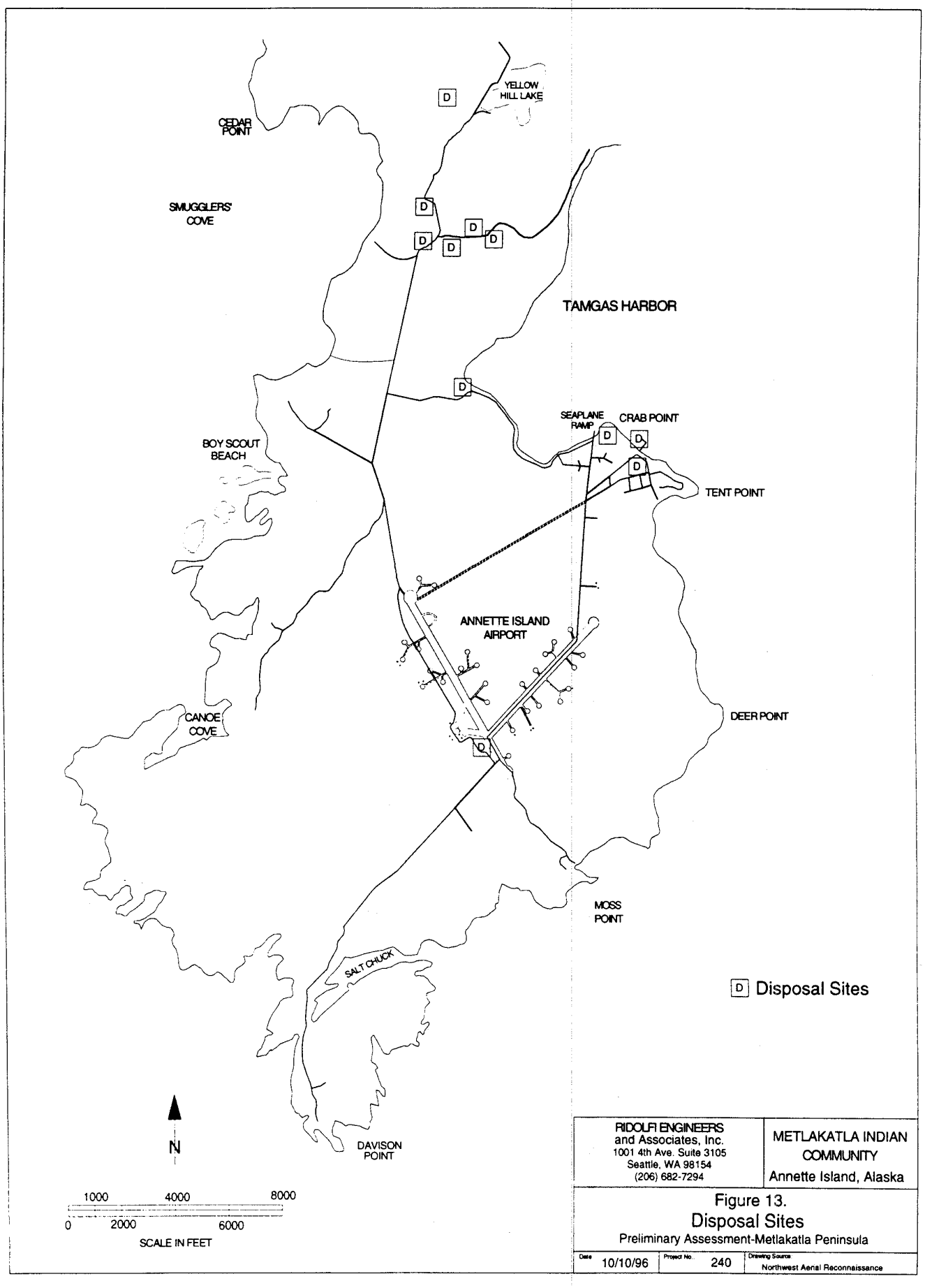

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Figure 13.
Disposal Sites
Preliminary Assessment-Metlakatla Peninsula

Date	Project No.	Drawing Source
10/10/96	240	Northwest Aerial Reconnaissance

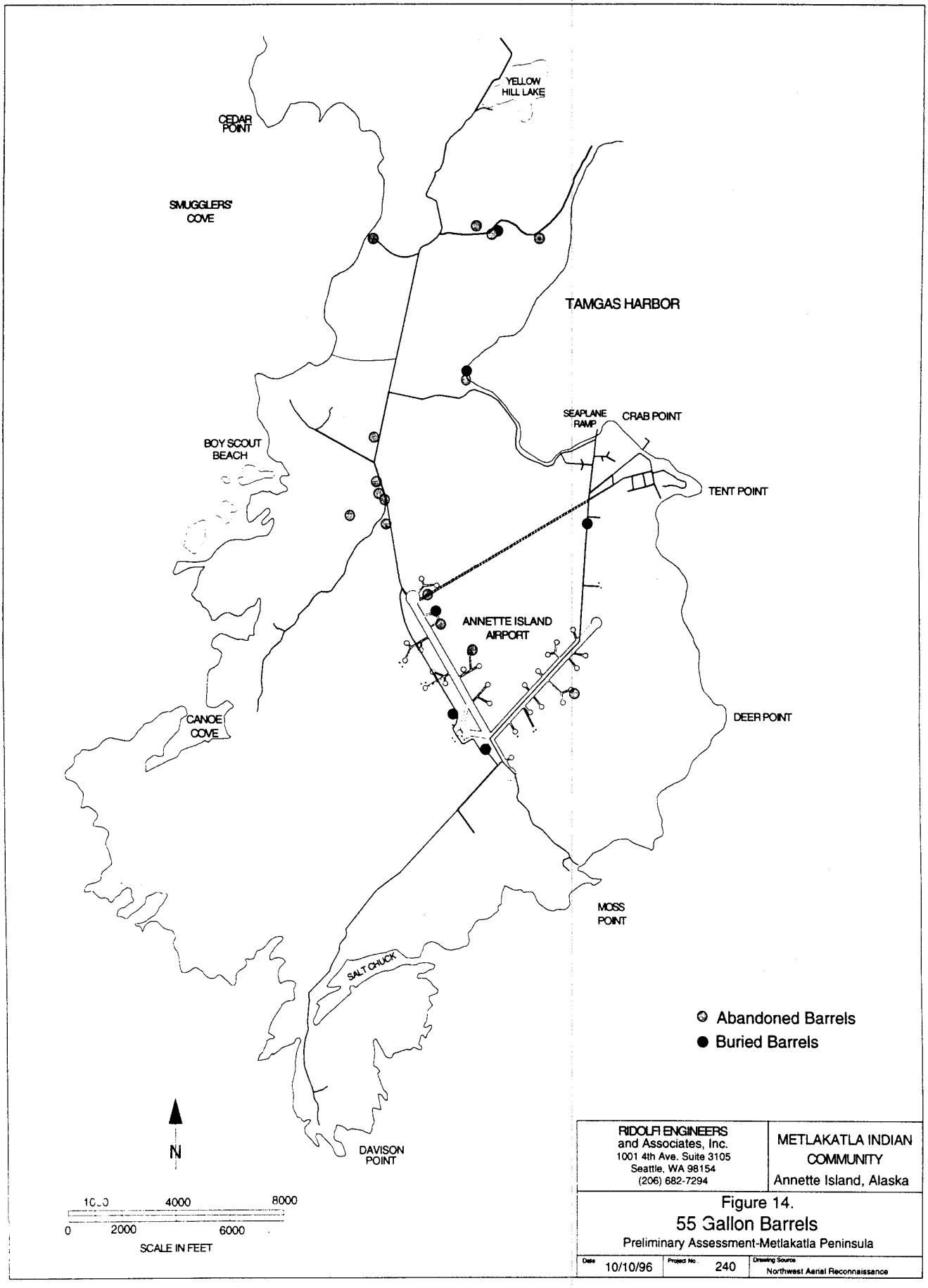

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Figure 14.
55 Gallon Barrels
Preliminary Assessment-Metlakatla Peninsula

Date	Project No.	Drawing Source
10/10/96	240	Northwest Aerial Reconnaissance

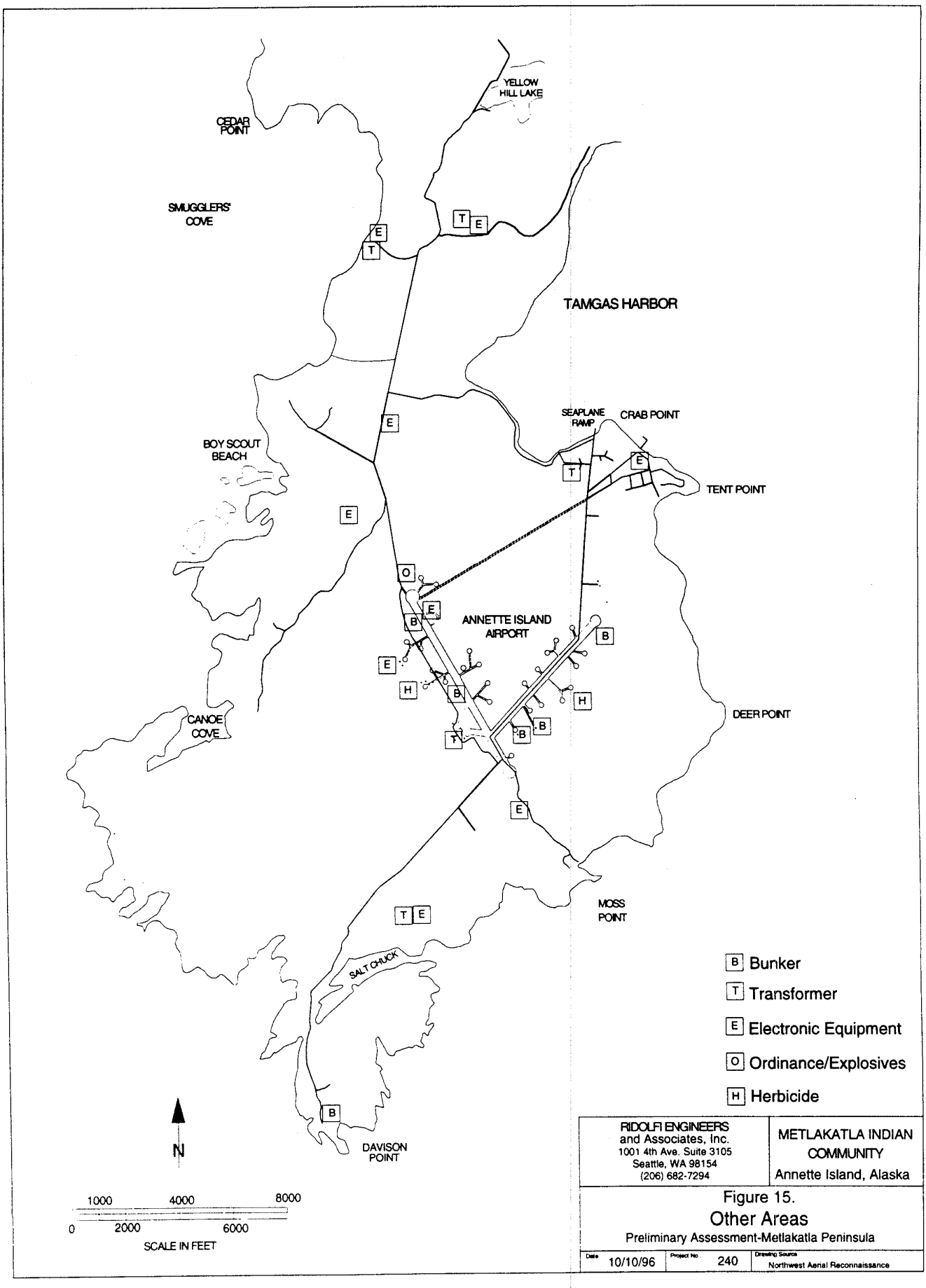

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Figure 15.
Other Areas
Preliminary Assessment-Metlakatla Peninsula

Date	Project No	Drawing Source
10/10/96	240	Northwest Aerial Reconnaissance

3/1993 Trip Report Federal Aviation Administration Hazardous Waste Removal/Disposal Project, Annette Island FAA Station, Ecology and Environment, Inc.
E&E conducted cleanup of some hazardous wastes at the Annette Island FAA facilities in September and October, 1992. The activities consisted of the removal, transport and off-site disposal of seven PCB transformers, one PCB rectifier, six PCB-containing rectifiers, and small quantities of miscellaneous hazardous wastes identified in a prior environmental report. In addition, E&E performed confirmation sampling of floor areas below electrical equipment which contain PCBs. A detailed inventory of hazardous wastes removed off the island for disposal is included in Appendix A.

1/1995 Trip Report Federal Aviation Administration Hazardous Waste Removal/Disposal Project, Annette Island FAA Station

5/1995 Site Cleanup and Investigation Report Annette Island FAA Station, Annette Island, Alaska, Ecology and Environment, Inc.
E&E conducted interim cleanup activities at the hangar, the glide slope transmitter (GS), and the localizer building (LOC). Interim cleanup activities at the hangar consisted of sweeping metal debris from small areas of the concrete slab in sections of the floor where leaking transformers from outside of the building were formerly stored, cleaning the storage areas with solvent, containerizing the cleaning materials, disposal of the cleaning materials, and confirmational wipe sampling of the affected concrete. Solvent cleaning failed to remove the PCB contamination to levels below cleanup standards. E&E wipe sample location map and analytical data results are included in Appendix A.

Interim cleanup activities at the GS consisted of the removal of approximately 15 gallons of non-PCB containing dielectric fluid, containerization of the oil, and disposal. Interim cleanup activities at the LOC consisted of the removal of five small sealed transformers from outside of the building, containerization, and transport to a hazardous waste storage building at the VORTAC for storage.

7.0 RECOMMENDATIONS

Cleanup goals and objectives should be established in order to develop a strategy to mitigate the environmental impacts at the Metlakatla Peninsula. Expected future uses of lands or natural resources should be considered to determine contaminant cleanup levels based on potential risks to human health and the environment.

It is recommended that Phase II mitigation activities include an asbestos inventory and hazard management plan; investigation of hazardous conditions related to tanks, pipes, bunkers, disposal sites, lead-based paint, and associated spill areas; and assessment of contamination potential related to fisheries resources. Based on the results of the Preliminary Assessment, a listing of site problems and facilities recommended for further consideration and/or action is presented below.

Human Health-Related Threats

- Friable asbestos containing materials (ACM) (thermal pipe insulation) in the hangar (No. 75) should be remediated. The ACM is in very poor condition at many locations in the open (to the east) hangar. The prevailing south to southeasterly winds produce breezy conditions inside the hangar that disturb the ACM. Thus, there is a potential for exposure of the mill workers to airborne asbestos fibers. To reduce asbestos fiber releases and future exposure, mill workers should be advised on the use of respirators and protective clothing and

informed of the procedures for working in and around friable and suspected non-friable (interior walls, exterior siding, and vinyl floor tile) ACM found in the hangar.

- The PCB-contaminated area between hangar (No. 75) and USCG garage (No. 71) should be delineated and closed to foot traffic until remediation is undertaken. There are currently no barriers to prevent the spread of the PCBs outside the known zone of contamination. Remediation of PCB-contaminated concrete and soil beneath the concrete in the northwest corner of the hangar is reportedly being undertaken by the FAA.

- The debris comprising the water treatment plant (No. 1) should be inspected to locate any equipment that may contain mercury or other hazardous substances. Collection and analysis of sediment/soil samples from drainages leading away from the water treatment plant could be undertaken to delineate the degree and extent of mercury contamination.

- Soil sampling around the FAA tank farm (No. 42) should be undertaken to delineate the horizontal and vertical extent and concentration of petroleum hydrocarbons. The presence of benzene and other petroleum hydrocarbons has been reported. Pumping of the contents of some or all of the tanks in the tank farm is reportedly being undertaken by the FAA.

- Friable ACM (thermal pipe insulation, boiler insulation, and vinyl floor tile) exposed in debris piles at the former public school (No. 54) should be remediated to prevent further release of and human exposure to asbestos fibers into the atmosphere. Also friable ACM (thermal pipe and boiler insulation) in buildings housing steam boilers at the public school (No. 54), Annette Inn (No. 82), the hangar (No. 72), fire truck hut (No. 50), and USCG quarters (No. 69) should either be remediated or the boiler rooms sealed to prevent entry to minimize exposure potential. Asbestos warning signs should be posted in the ACM areas until abatement is implemented.

- Explosives recently discovered in one of two underground fuse magazines (No. 31) were reported to have recently been neutralized and removed. The current condition and contents of the magazines should be confirmed.

- Dielectric fluid from five out-of-service transformers, one located in a metal hut (No. 47), one located on the ground (No. 85), and three on an elevated platform (No. 85), should be sampled, analyzed for the presence of PCBs, and removed for appropriate disposal.

- Location of buried barrels reportedly containing transformer dielectric fluid should be undertaken in proximity to former location of the 71st Garrison location (No. 61). The use of geophysical techniques could be used to determine the extent of the barrels. When located, dielectric fluids should be analyzed for PCBs, and the materials removed and disposed of, as appropriate.

- Soil samples should be collected at areas adjacent to the runways and analyzed for herbicides (No. 33) as they reportedly were applied by the FAA to kill vegetation adjacent to the runways.

- Soil in the tank/pipeline junction boxes adjacent to the 15 concrete saddles at the tactical fuel storage area on the pipeline system (No. 39) should be sampled and analyzed for petroleum hydrocarbons (benzene).

Environmental Threats

- Closure or tank testing records, if available, should be reviewed for underground storage tanks (USTs) located at the BIA maintenance center (No. 7), the White Alice station (No. 15), non directional beacon (No. 19), remote control air ground station (No. 21), VORTAC station (No. 27), tactical fueling tanks on the pipeline system (No. 39), USCG housing (No. 44), gasoline station (No. 49), and FAA housing (No. 53). If the tanks are out of service, permanent closure of the USTs should be initiated. Geophysical techniques may be used to confirm the existence and number of USTs at the White Alice Station and gasoline station. Hoists located in the hangar (No. 75) and at the service building (No. 55) may have small subsurface hydraulic oil tanks. Further inspection of these tanks for possible leakage should be undertaken.

- The three oil water separators (No. 40) in subsurface vaults should be permanently closed.

- Soil sampling should be undertaken around the former locations of above ground storage tanks (ASTs) on the pipeline system (No. 39) where indications of contaminant releases exist. Specific attention should be paid to the former locations of three 80,000-gallon ASTs in order to determine the type, lateral and vertical extent of the suspected hydrocarbons, and the contamination concentration level. Stream sediment and water sampling of nearby waterways should also be undertaken to determine if hydrocarbons have migrated into and impacted the local streams. Soil with indications of a petroleum release in areas along the pipeline (No. 39) and in proximity to a suspected fuel loading facility (No. 41) should be sampled.

- Soil sampling should be undertaken around the existing three above ground storage tanks west of the hangar (No. 73 and No. 74) in order to determine the contaminant type, lateral and vertical extent, and the concentration level of the suspected hydrocarbon release.

- Soil sampling should be undertaken at the location of stained soil found at the BIA maintenance center (No. 7), north of the gasoline station (No. 49), and at the microwave receiver station (No. 85) in order to determine the type, lateral and vertical extent, and the respective contamination level of the suspected hydrocarbon release.

- Impacts of tar spills at surface barrel dumps (No. 24 and No. 64), the asphalt plant (No. 37), and south of the BIA maintenance center (No. 7) should be quantified.

- Geophysical techniques could be employed to determine if suspected disposal sites containing buried barrels exist at the asphalt plant (No. 37), north of the weather bureau station (No. 67), and log storage yard (No. 79). These techniques could also be employed to determine if underground storage tanks are present in the ground at a gasoline station formerly located near the trailer (No. 76), the existence of a possible disposal site adjacent to the dock (No. 43), and to evaluate suspected bunkers (No. 65).

- An asbestos survey should be performed to establish a baseline inventory, ascertain the potential environmental hazard, and to plan for appropriate in-place management or mitigation.

- Lead-based paint surveys should be performed on painted structures and buildings to inventory and plan appropriate management or mitigation. In addition, sampling of soil around some of the painted structures may be required.

- Existing and historical above ground tank sites, if positively identified, should be surveyed to determine if spills have impacted soil underlying or adjacent to the tanks.

- Barrel inventories should be performed at all known barrel dump sites to determine the number and condition of barrels and to identify the types of material contained in the barrels, if possible.

- Abandoned electronic equipment abandoned at the AACS transmitter station (No. 22), middle marker station (No. 24), glide slope facility (No. 36), FAA storage yard (No. 51), remote receiver station (No. 63), localizer (No. 80) and microwave receiver station (No. 85) should be evaluated to determine whether any of the equipment constitutes a hazard and to plan for appropriate mitigation, if necessary.

8.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

Callie A. Ridolfi, P.E., Principal
Licensed Professional Engineer: Colorado, Idaho, Washington, Oregon, Alaska
M.S., Environmental Engineering, University of Washington
B.S., Mining Engineering, Colorado School of Mines
Certified Hazardous Waste Operations Supervisor

Callie Ridolfi has over 15 years of experience in environmental management of hazardous waste and mineral resource projects. She has managed Superfund activities on behalf of EPA Region 10, and has worked extensively on environmental projects at privately owned and federal (Department of Energy) Superfund sites. She has effectively managed large, complex projects involving contamination by heavy metals, low level radionuclides, and organics in soil, sediment, and water. She is experienced in sampling, site characterization, feasibility studies, and design and management of Superfund hazardous waste projects. For the past six years, she has provided technical oversight of CERCLA RI/FS and remedial design activities at the Bunker Hill NPL Site for EPA Region 10 and the Coeur d'Alene Tribe. Callie also has six years of experience at DOE uranium mill tailings sites in Colorado and Utah, where she performed remedial investigation/feasibility studies, developed remedial action plans, estimated costs and prepared schedules for cleanup activities, managed design engineering, and developed construction specifications. She has identified and screened technologies for low-level radioactive and other hazardous wastes. Work Callie has managed has received outstanding performance ratings from EPA.

Henry M. (Hank) Seipt, M.S., Environmental Project Manager
M.S., Mineral Economics, University of Arizona
B.S., Geology, Washington State University

Henry Seipt is a project manager with over 18 years of experience, ranging from environmental engineering to exploration geology to economic/financial analysis. His recent responsibilities have included bidding and project management of Phase I, II, and III Environmental Site Assessments in Washington and Oregon; asbestos and lead-based paint building surveys; and participating in a variety of other hazardous waste-related projects. Henry specializes in environmental site assessments; asbestos-containing materials, Radon, and lead-based paint surveys; lead in drinking water surveys; asbestos abatement project supervision; underground storage tank decommissioning; subsurface site characterization; soil and groundwater remediations; and economic geology. Henry has provided these services to clients such as General Electric Appliances, Mead Corporation (Zellerbach), UNOCAL, Time Oil Company,

KMart Corporation, Foodmaker, AT&T, Winmar Properties, Environmental Insurance Management, American Copper & Nickel Company, Cyprus Mines Corporation, and Pacific Testing Laboratories. Henry is an AHERA (Asbestos) Inspector; and Oregon State Soil Matrix Cleanup Supervisor.

Susan Alvarez, P.E., Civil Engineer
B.S., Civil Engineering, Rice University
Licensed Professional Engineer: New Mexico, Texas, Washington; Oregon pending

Susan Alvarez has over 14 years of experience in civil engineering for hydrology, hydraulics, waste management, transportation, and site development projects. She is currently working on Moon Creek, part of the Coeur d'Alene River Basin (ID) restoration project, involving rehabilitation of the creek to support native cutthroat populations. She has completed designs for the U.S. Army Corps of Engineers, for the Los Alamos National Laboratory, and for private hazardous materials disposal firms that have involved RCRA permitted facilities and design. In addition, she has completed designs for reclamation of wetlands, and for lands disturbed by solid waste disposal sites and land farming practices. Susan has been involved in all aspects of a project's development: from the initial project planning and site evaluation, to the development of plans, specifications and cost estimates, to field observation and construction management.

Susan has gained extensive experience in large-scale drainage projects through working with municipalities, the Corps of Engineers, and FEMA. Her experience includes the development, analyses, and management of drainage projects such as the Lomitas Negras Arroyo Bank and Grade Stabilization project, for which she served as project manager. She has designed detention dams, performed hydraulic, sediment transport analyses and design, and designed measures for mitigating erosion to existing municipal solid waste landfills.

Tom Bowden, M.S., Environmental Scientist/Geologist
M.S., Geological Sciences, University of California, Riverside
B.S., Geological Sciences, University of California, Riverside

Tom Bowden has 18 years of professional experience including environmental investigations related to hazardous waste, water and sediment quality, and geologic and hydrologic environmental impacts. His expertise encompasses project management; development and implementation of work plans, sampling plans and QA/QC plans; geologic and environmental field investigations and oversight; evaluation of geologic, hydrologic and chemical data; subsurface analysis; statistical analysis; and technical report preparation. He has extensive experience in performance and oversight of CERCLA RI/FS and evaluation of inorganic/organic analytical data. His experience also includes data collection and interpretation of geologic conditions using remote sensing, seismic refraction, electromagnetics, and x-ray fluorescence. He has specific project experience at the Bunker Hill Superfund site in Idaho, the George Wright Landfill in Spokane, the Hamilton Island Superfund site in Washington, and the Hanford Federal Facility.

Lynn Paxson, J.D., Environmental Attorney
J.D., School of Law, University of Washington
B. S., Renewable Resources & Wildlife and Fisheries, Texas A&M University
Hazardous Waste Health and Safety Certification

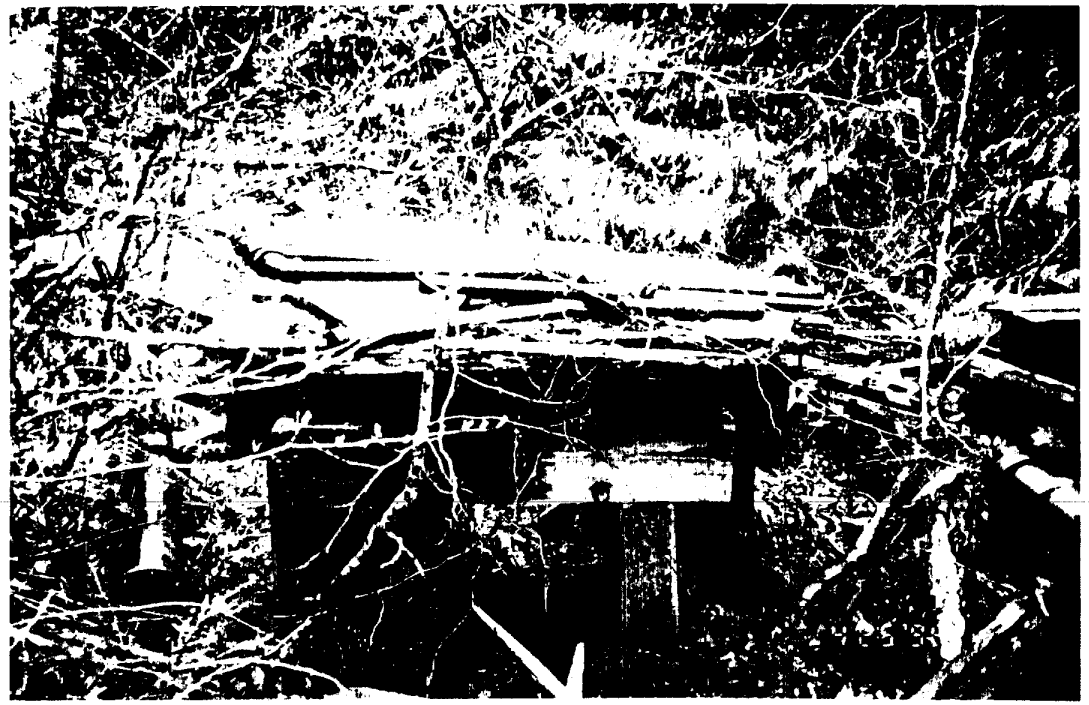
Lynn Paxson has over 12 years of experience as an ecologist and environmental attorney. Her experience includes regulatory analysis, compliance review, legal research and writing, development of ARARs, development of guidelines for local government wetland protection ordinances, and compilation of water quality standards. As a habitat biologist for the Washington State Fish & Wildlife Department, she is responsible for developing protocols for natural resource damage assessment, focusing on the marine environment and injury from oil spills. Her responsibilities have included analysis of environmental laws and regulations at the federal, state and local levels; critical review and comments on various technical documents developed for RCRA- and CERCLA-related matters; and critical review of proposed cleanup and closure options for hazardous waste sites. Her experience includes projects at Bunker Hill Superfund site.

Kathryn I. Foster, Computer-Aided Drafting, Mapping, and Digitizing
Registered Engineer-In-Training (EIT) Certificate in Washington
B.S. Civil Engineering, University of Washington
Current OSHA Hazardous Materials Health & Safety Certification
Certified Arcview Training

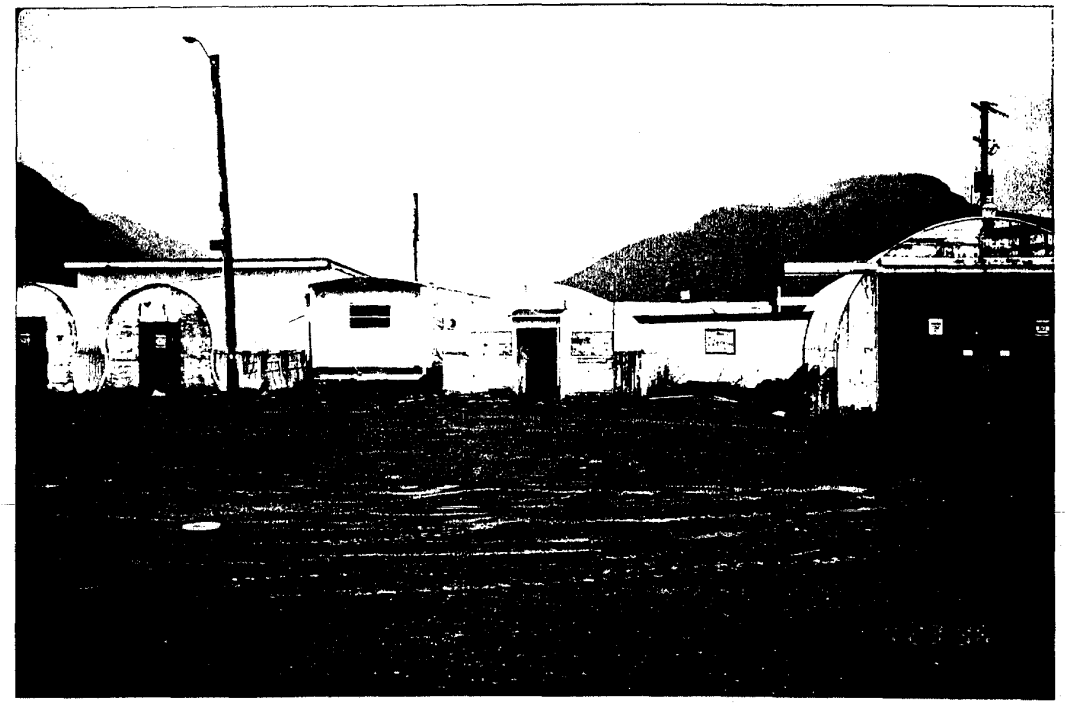
Kathryn Foster has experience in drawing and mapping with CAD and Arcview. Her responsibilities include the compilation of electronic and hard copy maps and topographic site surveys to generate CAD drawings; production of construction drawings; development and file transfer of CAD and ARCINFO GIS drawings using Arcview; CAD support and uploading of digitized files; and network system maintenance for engineering. She is currently providing CAD services in mapping mine locations and historic mine development for the Natural Resource Damage Assessment (NRDA) Plan for the Coeur d'Alene Mining District. Kathryn was responsible for CAD drawings from historic files and topographic site surveys for the Cataldo Mission State Park characterization and cleanup at Kootenai County, Idaho. For the Moon Creek engineering evaluation and cost analysis of a hard rock mine, mill, and tailings site, she compiled electronic and hard copy maps from historic and current sources to generate CAD drawings. For the Coal Mine Hazard Standards project for Metropolitan King County, WA, Kathryn provided CAD/GIS support and assisted in transfer of digitized files to the County's database system.

APPENDIX

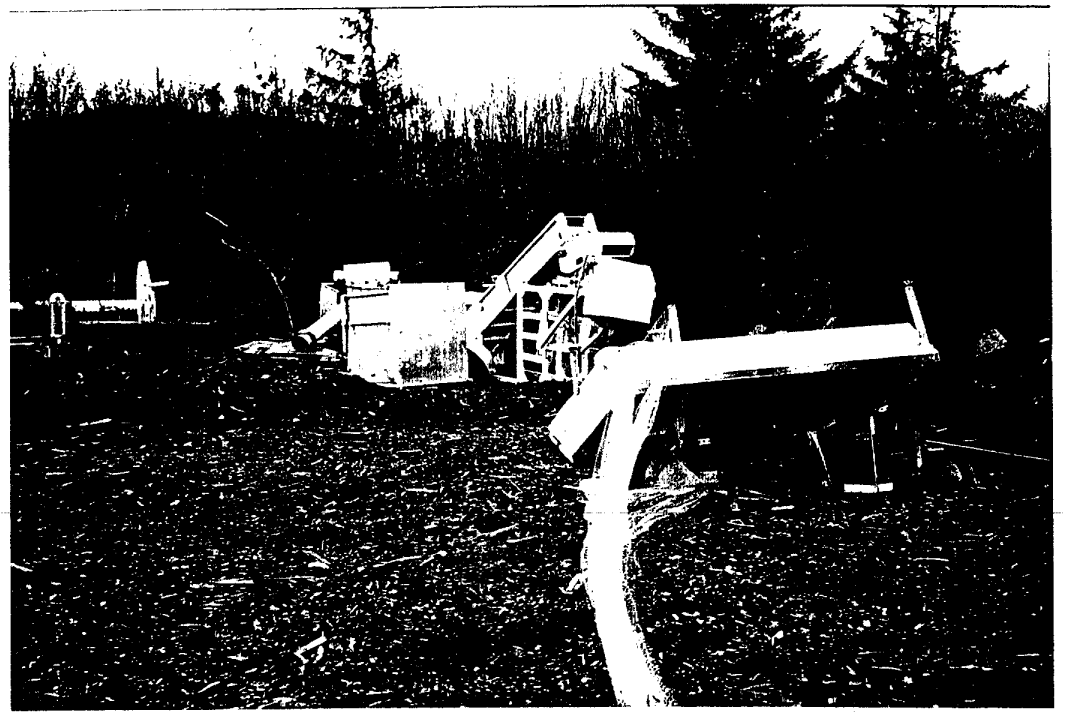
SITE PHOTOGRAPHS



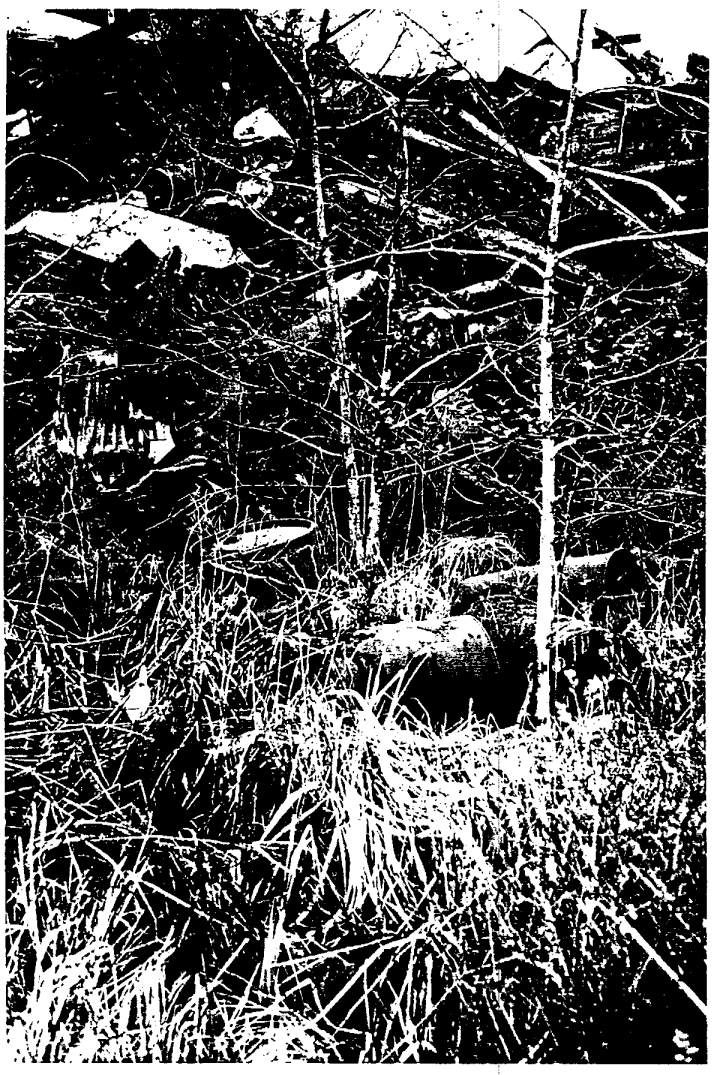
Photograph 1: Water Treatment Plant



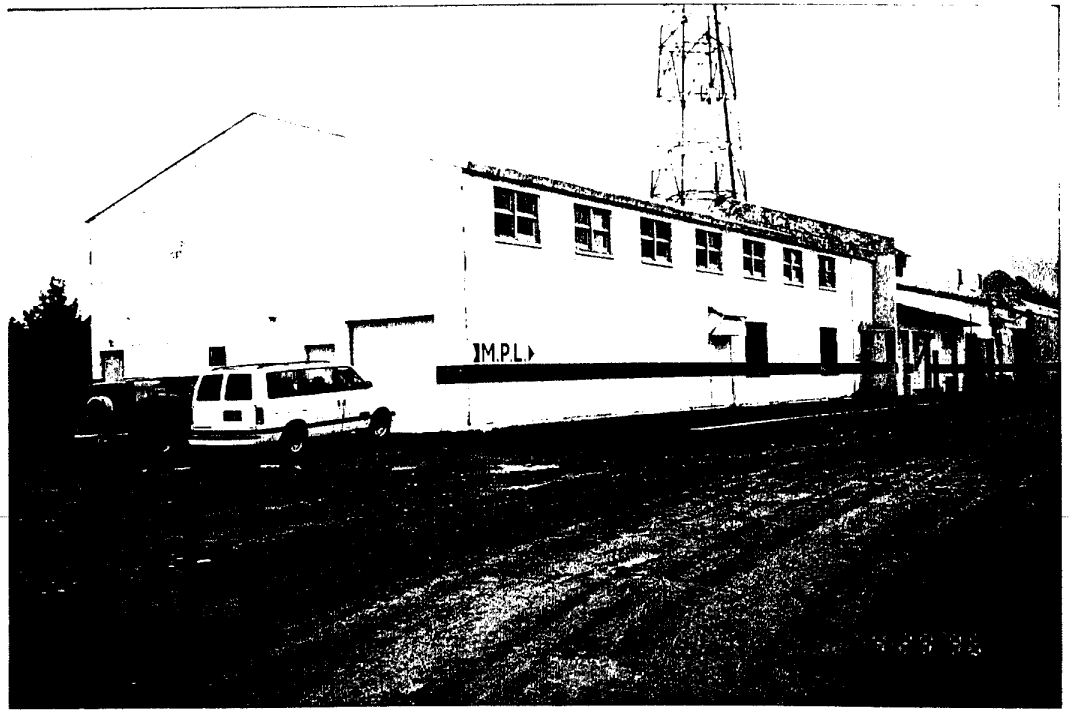
Photograph 7: BIA Road Maintenance Center



Photograph 8: Bark Disposal Fill Area



Photograph 10: Closed Automobile Landfill



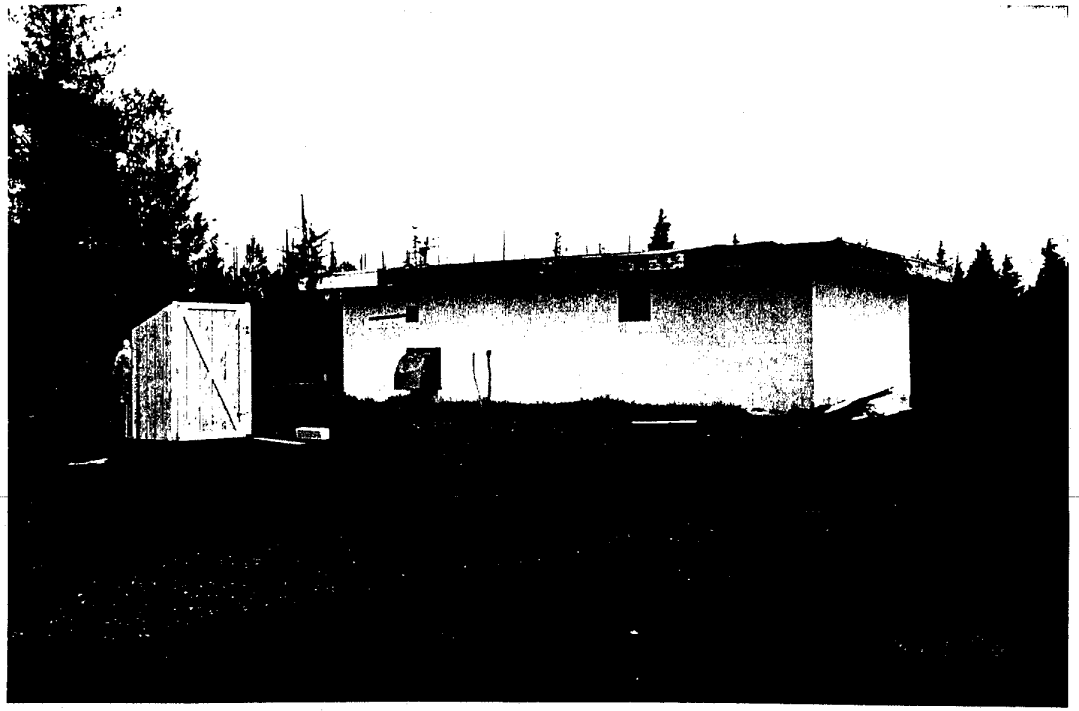
Photograph 15: White Alice Station

Photograph 16: Antenna Towers

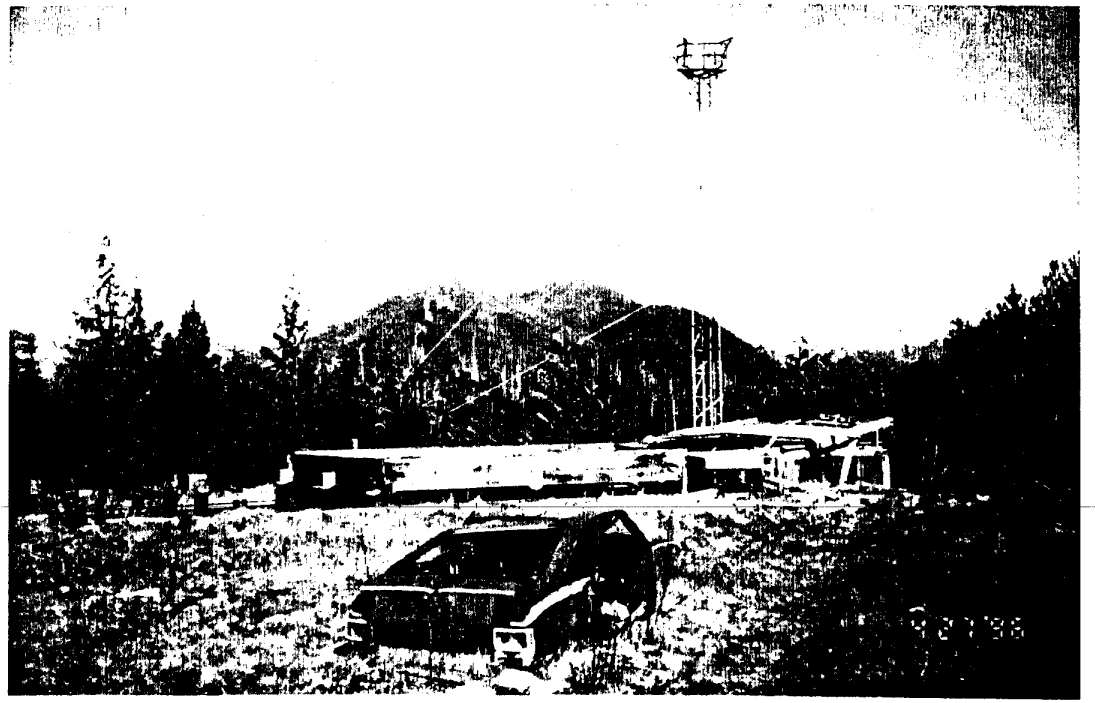
Photograph 18: Main Hospital Area

Photograph 19: Non Directional Beacon

Photograph 20: Weather Bureau Housing

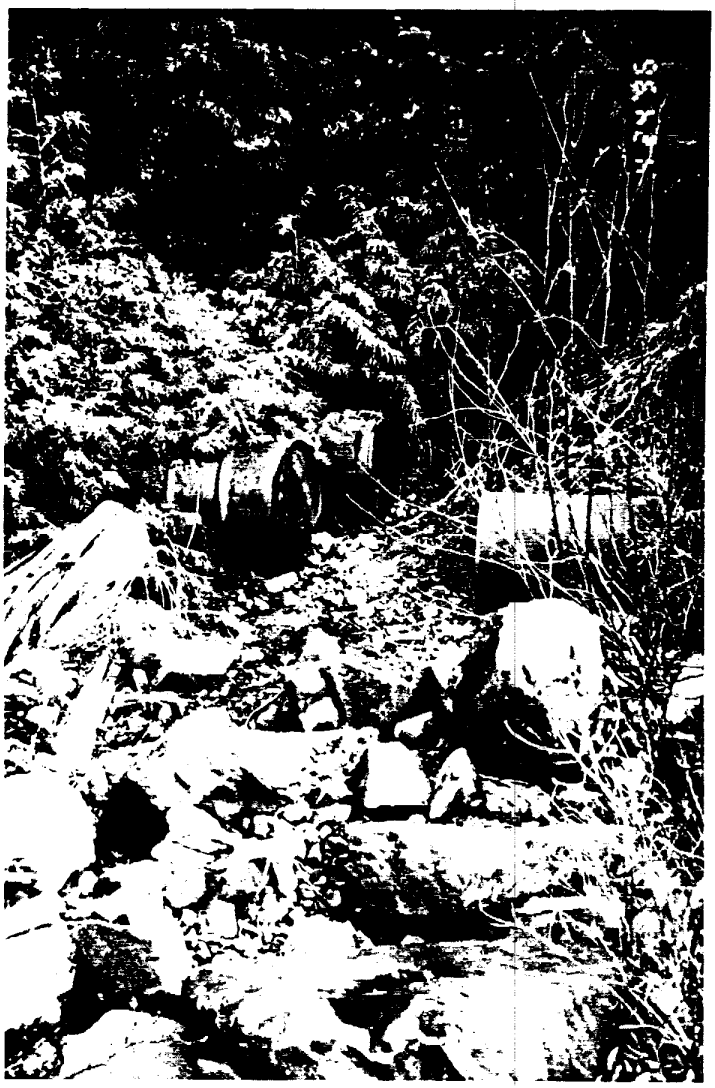


Photograph 21: Remote Control Air Ground

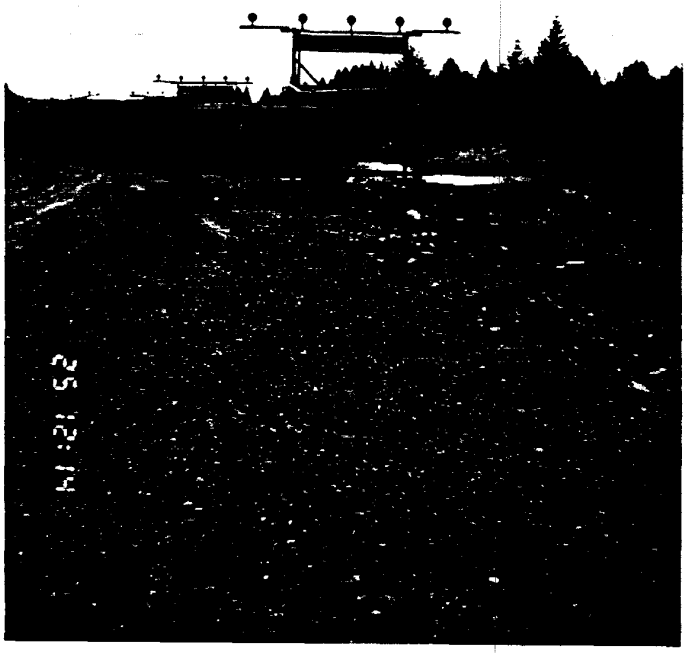


Photograph 22: AACS Station

Photograph 24a: Middle Marker Facility



Photograph 24b: Middle Marker Facility



Photograph 25: Approach Lighting System

Photograph 27: VORTAC Facility

Photograph 29: Directional Finder Antenna

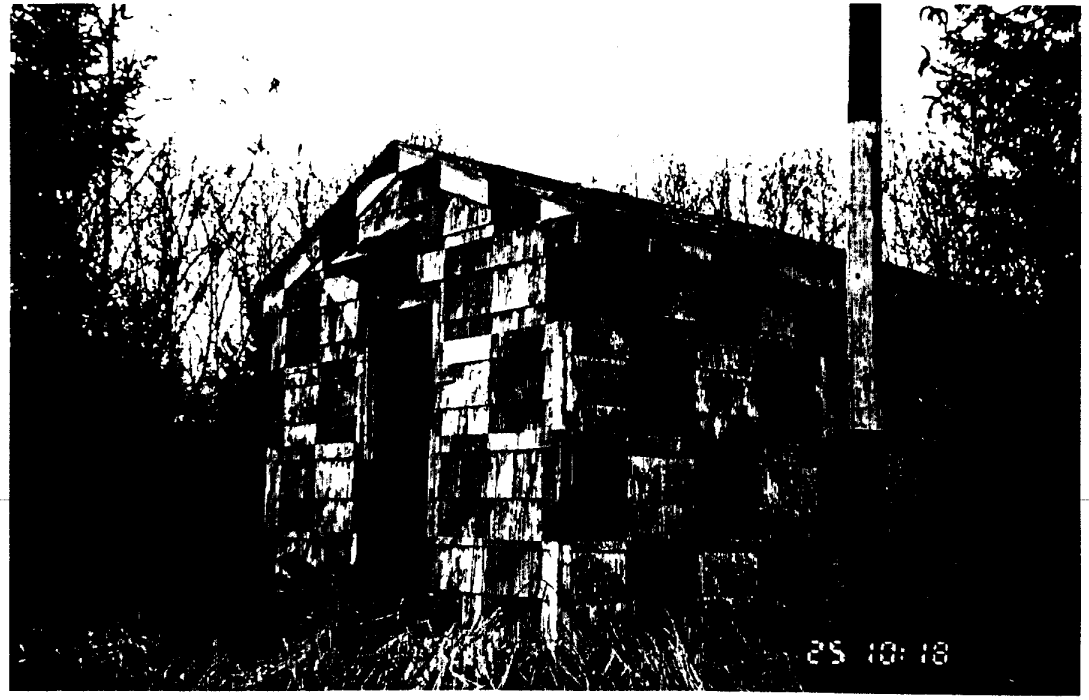
Photograph 30: Satellite Station

Photograph 31: Underground Fuse Magazines

Photograph 32: SALSR

Photograph 34: Runway to Camp Road

Photograph 35: Small Tower

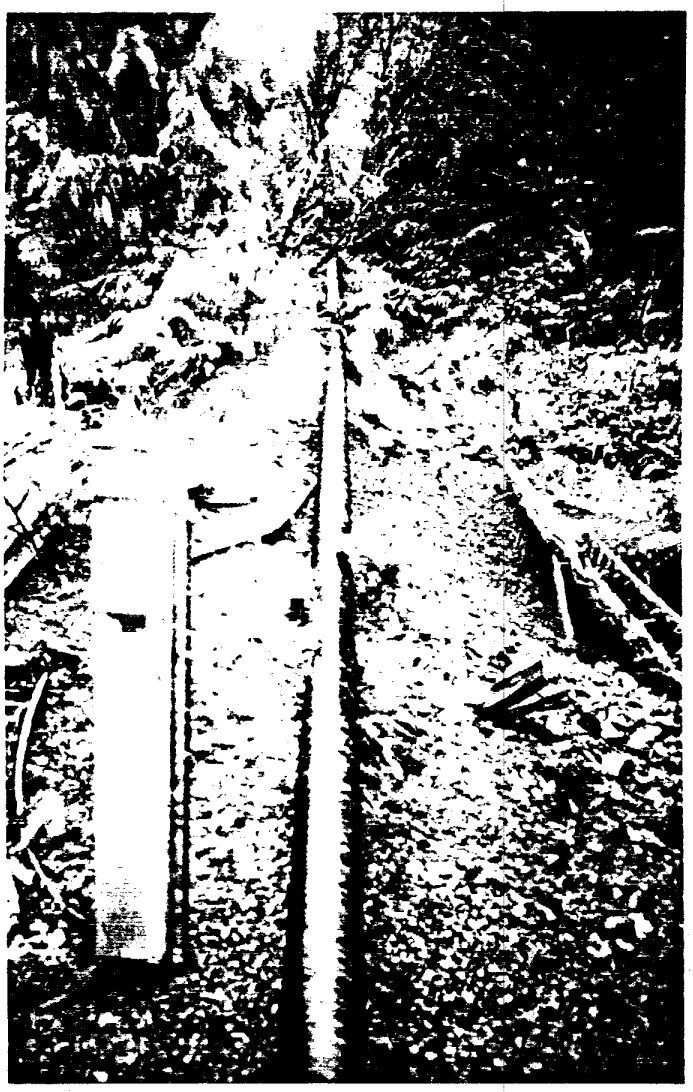


Photograph 36: Glide Slope Facility

Photograph 37a: Sand Shed/Asphalt Plant

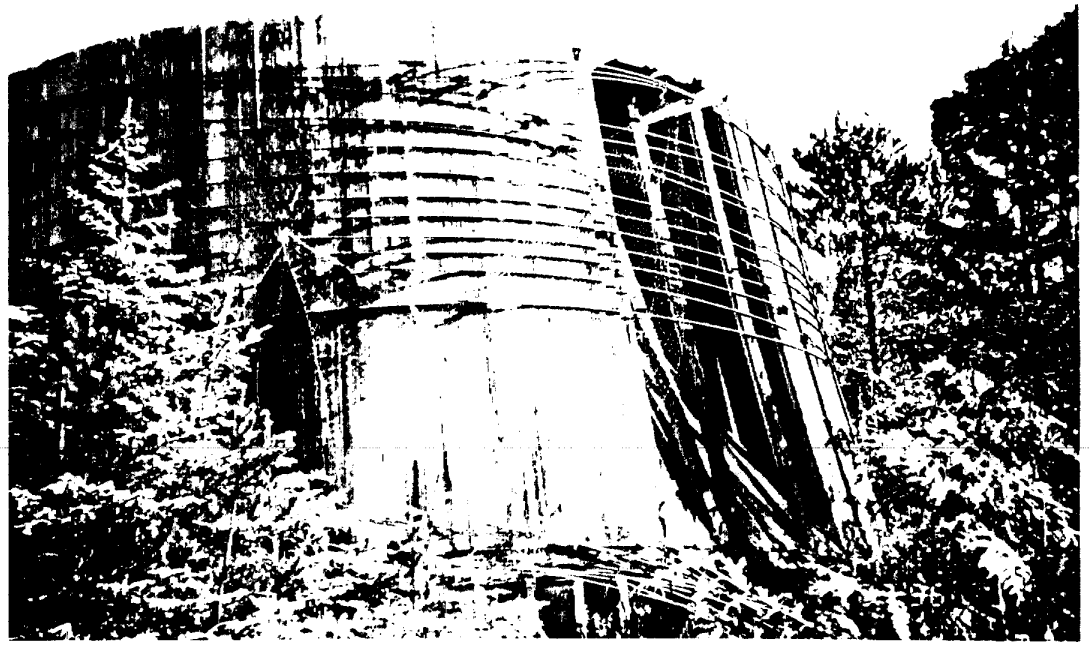
Photograph 37b: Sand Shed/Asphalt Plant

Photograph 37c: Sand Shed/Asphalt Plant



Photograph 39a: Fuel Pipeline System

Photograph 39b: Fuel Pipeline System



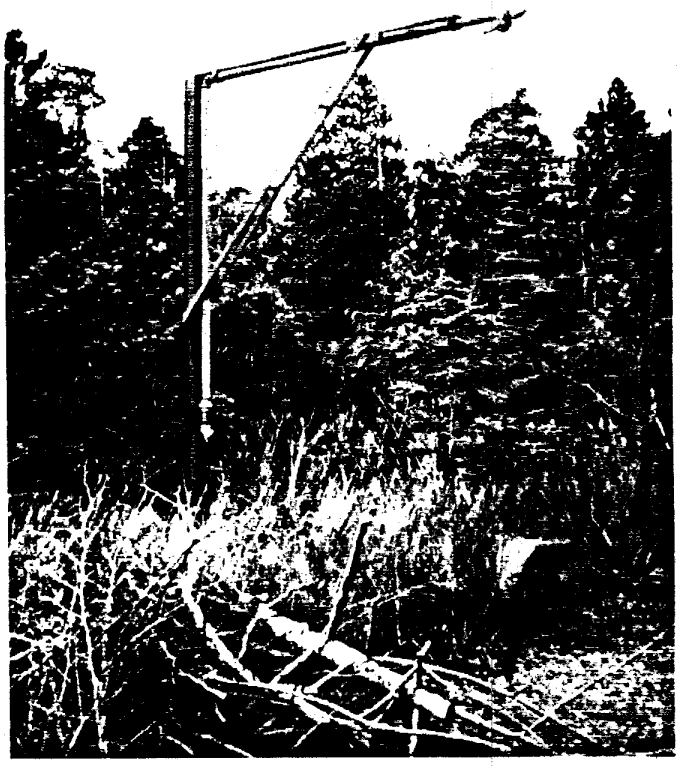
Photograph 39c: Fuel Pipeline System

Photograph 39d: Fuel Pipeline System

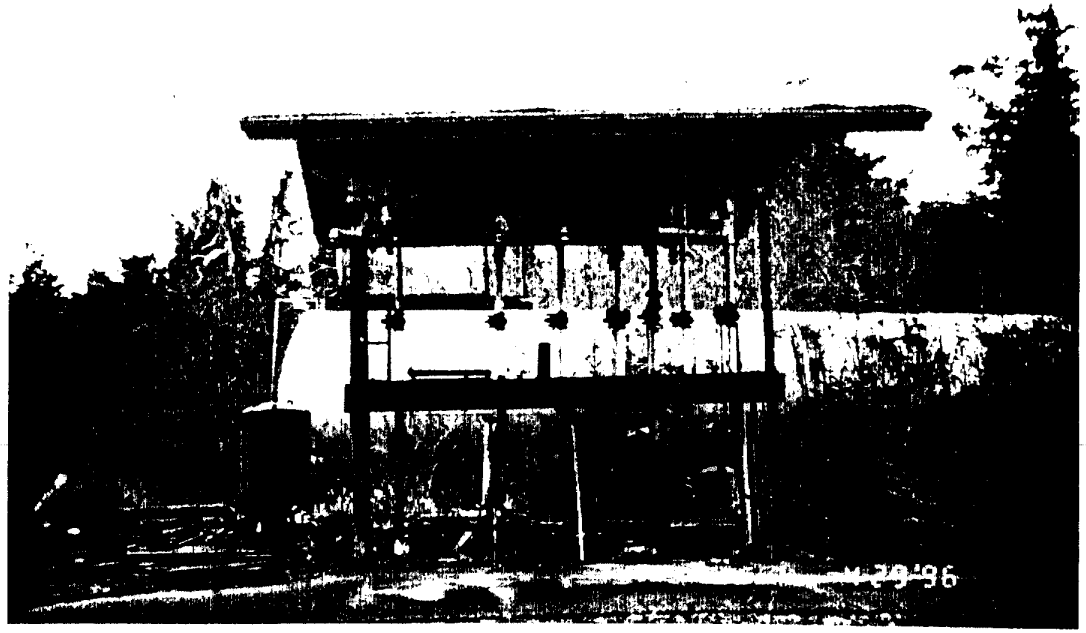
Photograph 39e: Fuel Pipeline System

Photograph 39f: Fuel Pipeline System

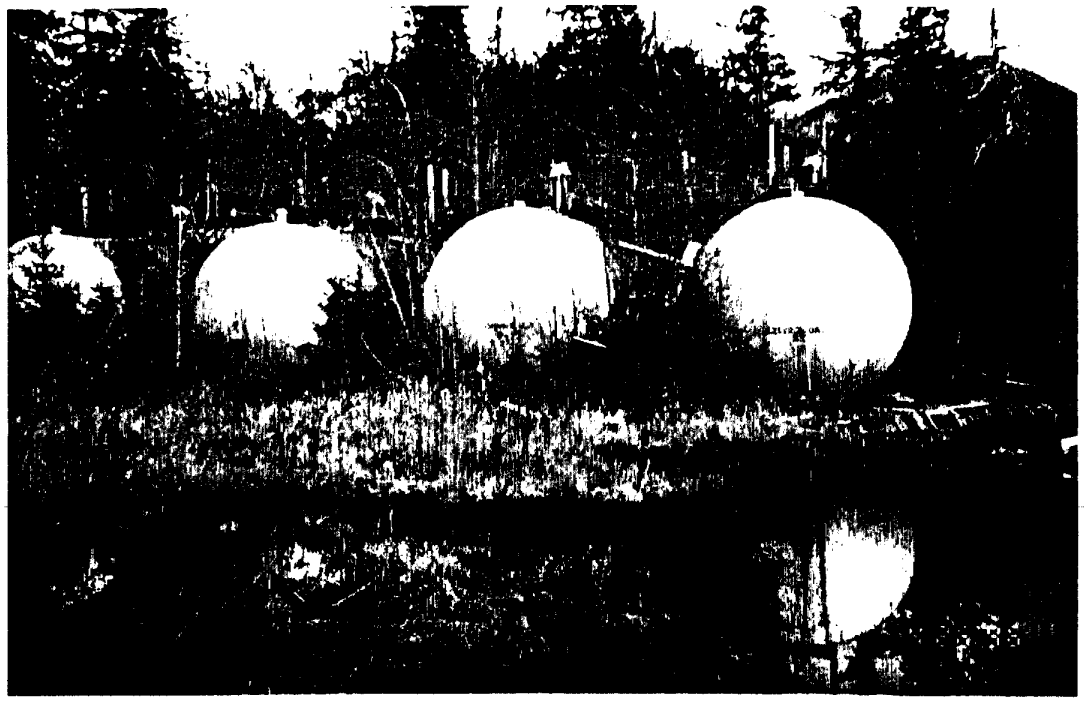
Photograph 40: Pipeline Oil/Water Separators



Photograph 41: Tanker Truck Loading Facility



Photograph 42a: FAA Tank Farm

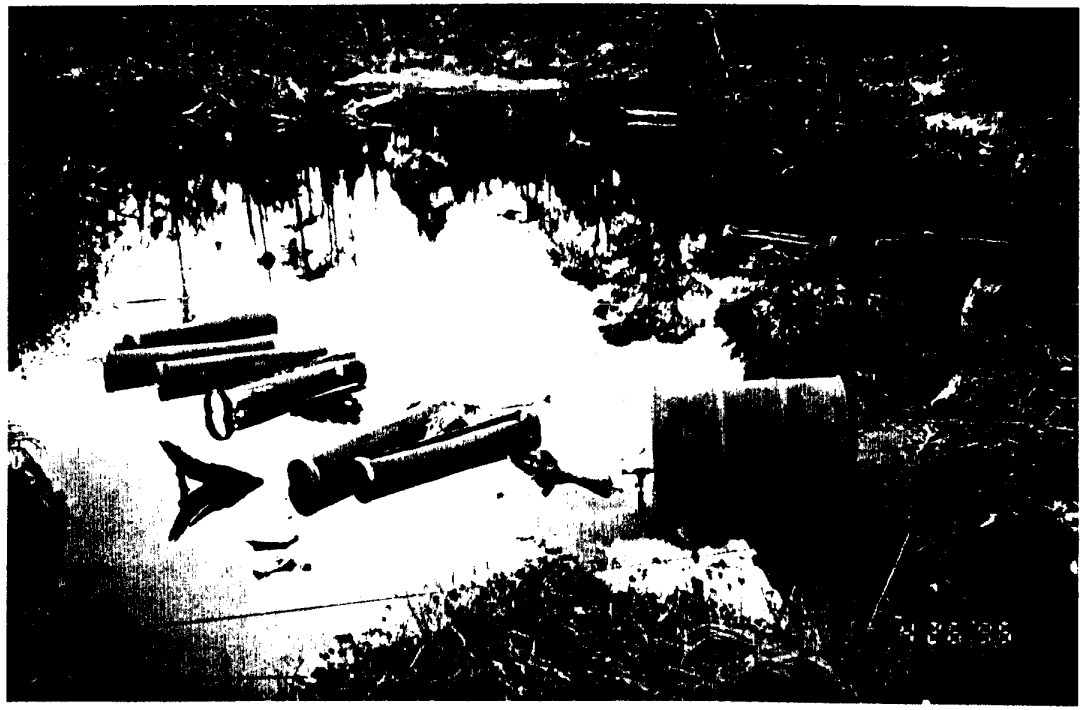


Photograph 42b: FAA Tank Farm

Photograph 42c: FAA Tank Farm

Photograph 43: South Tamgas Harbor Dock

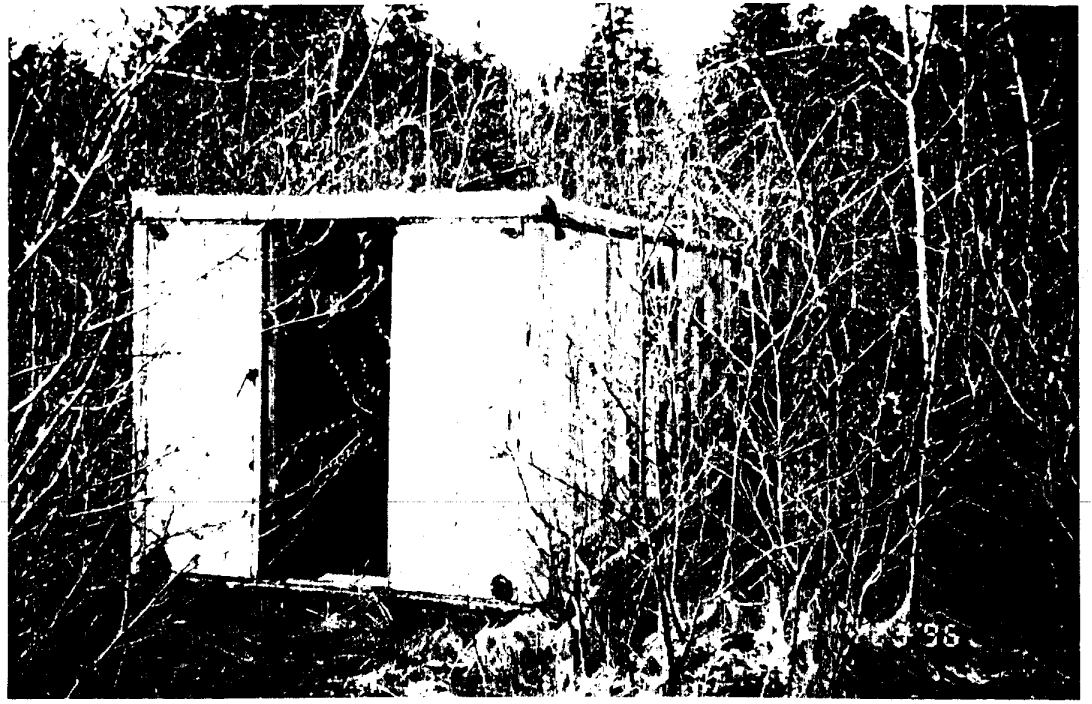
Photograph 46: USCG Fire Station/Post Exchange



Photograph 47: USCG Taxiways and Parking Circles

Photograph 49: Gasoline Station

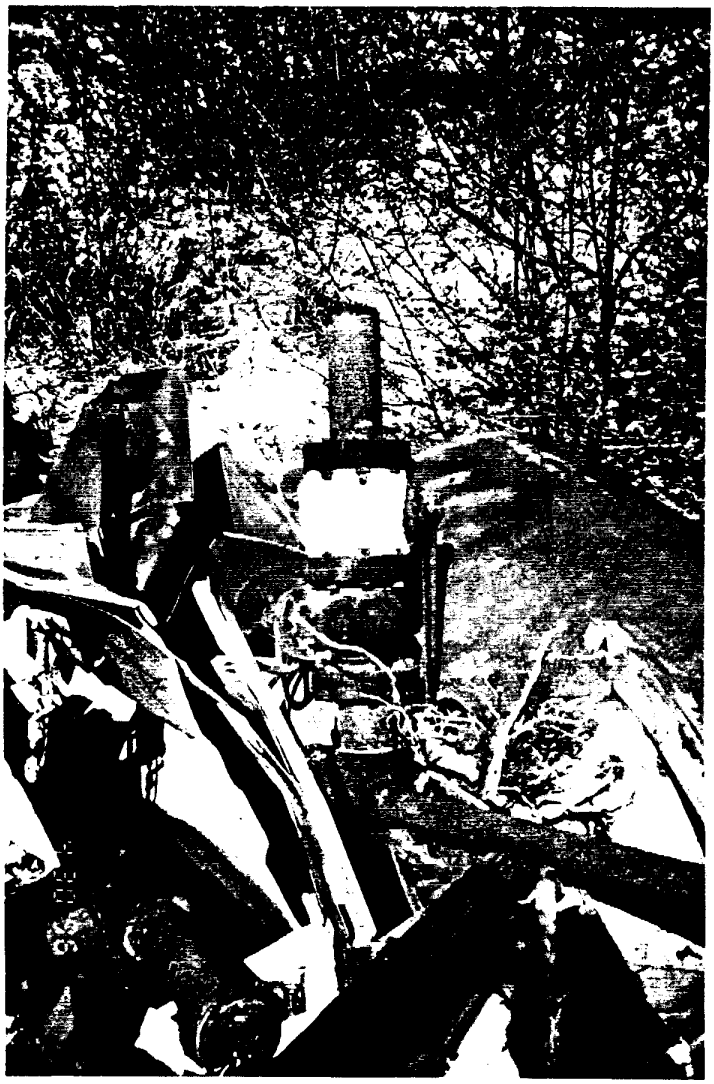
Photograph 50: Fire Truck Hut



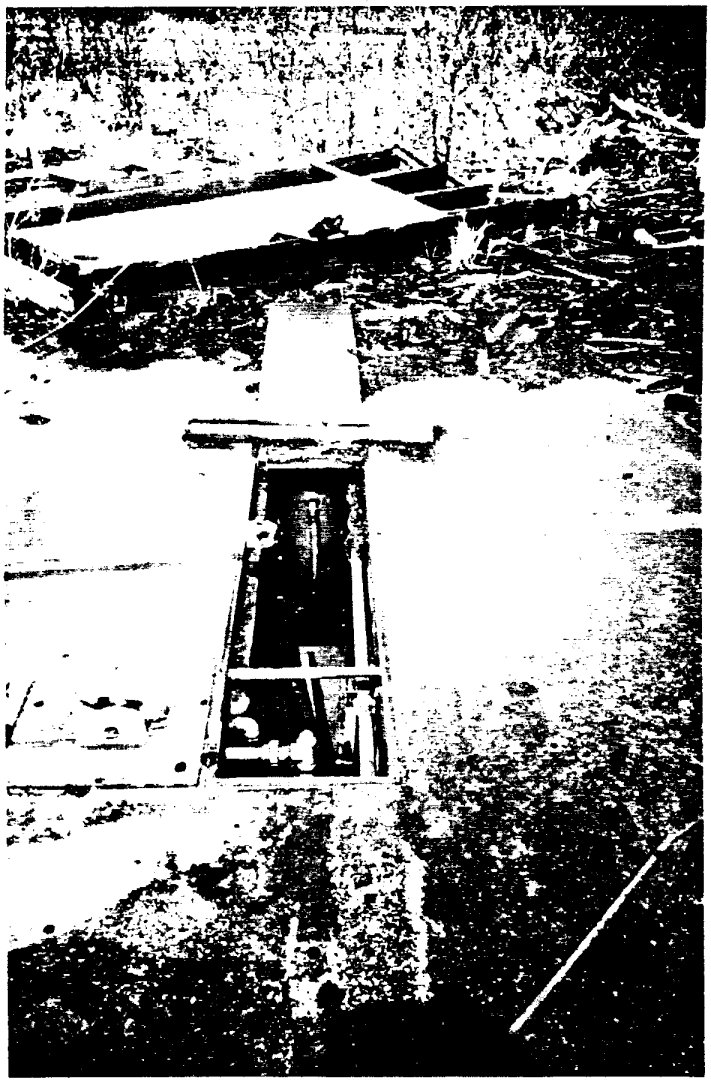
Photograph 51: FAA Storage Yard

Photograph 53: FAA Housing Area

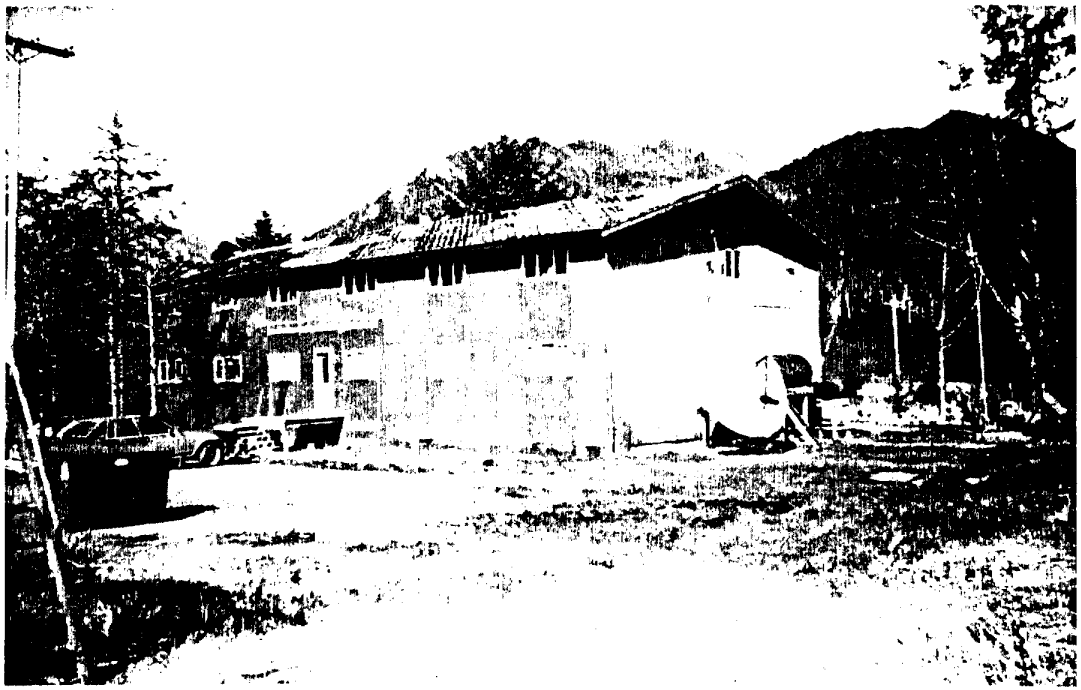
Photograph 54a: Public School



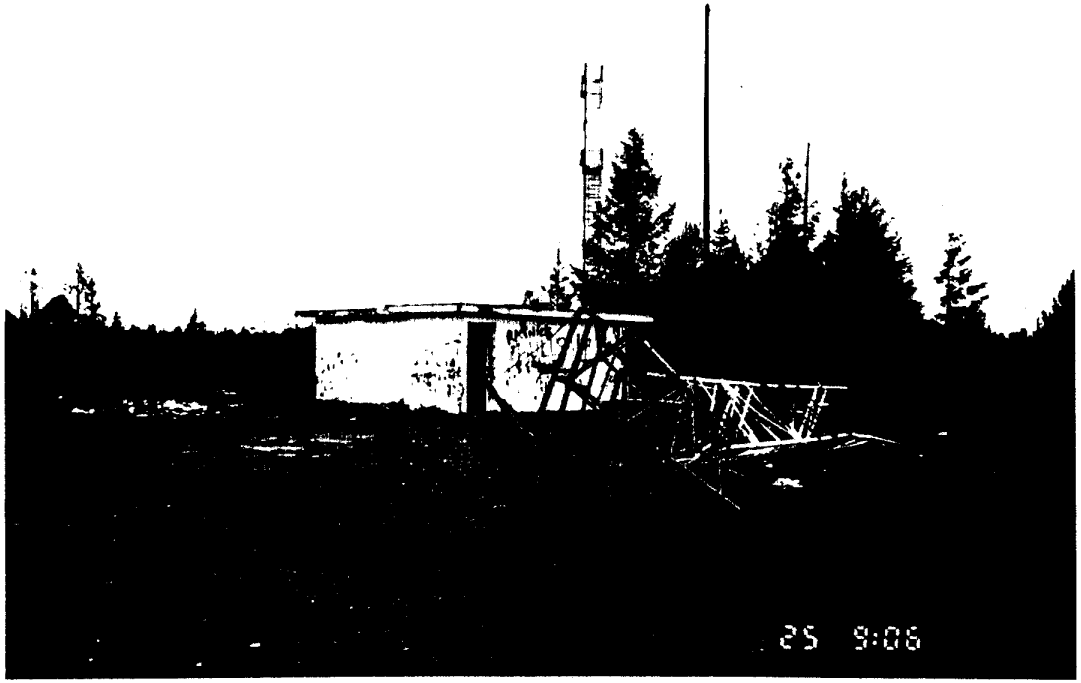
Photograph 54b: Public School



Photograph 55: Service Building



Photograph 56: PNA/WA Residential Building



Photograph 63: Remote Receiver Station

Photograph 64a: Runway Taxiways & Parking Circles

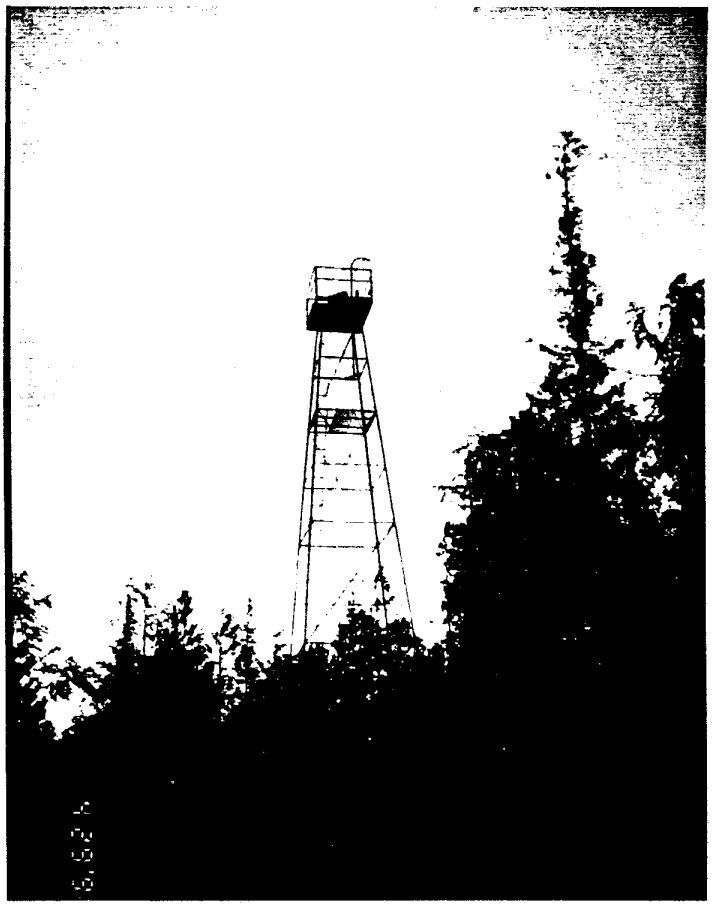
Photograph 64b: Runway Taxiways & Parking Circles

Photograph 67a: Weather Bureau Station

Photograph 67b: Weather Bureau Station

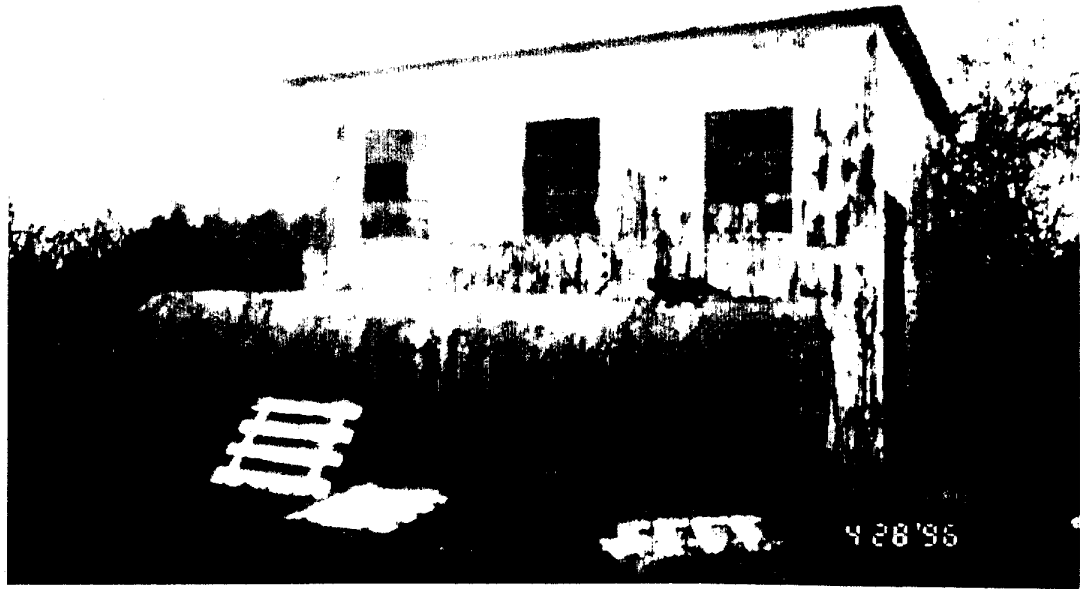
Photograph 68: USCG Water Treatment Plant

Photograph 69: USCG Quarters

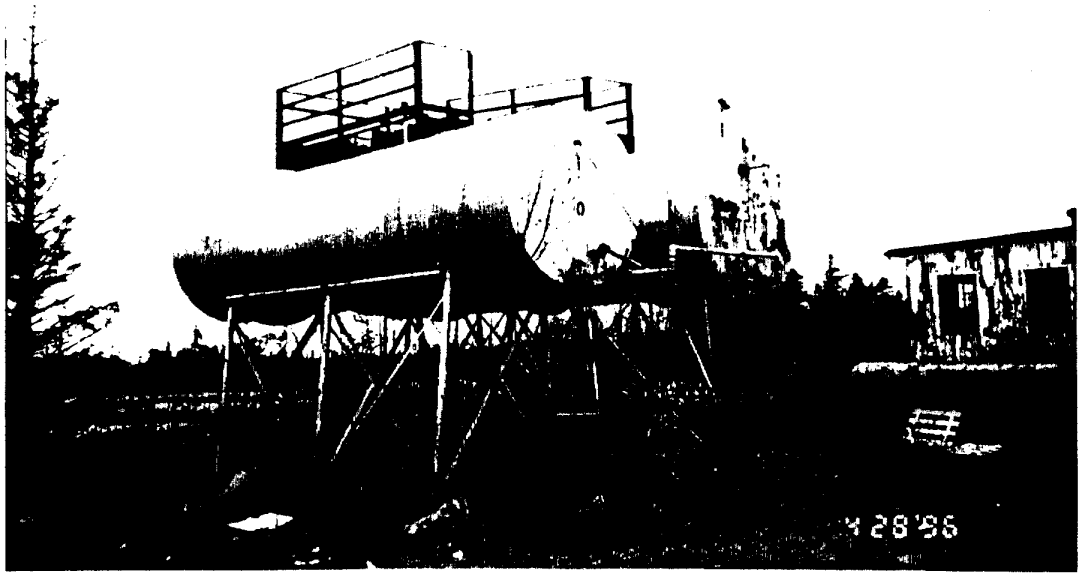


Photograph 70: Beacon Tower

Photograph 72: Hangar Boiler Building



Photograph 73: Boiler Building AST



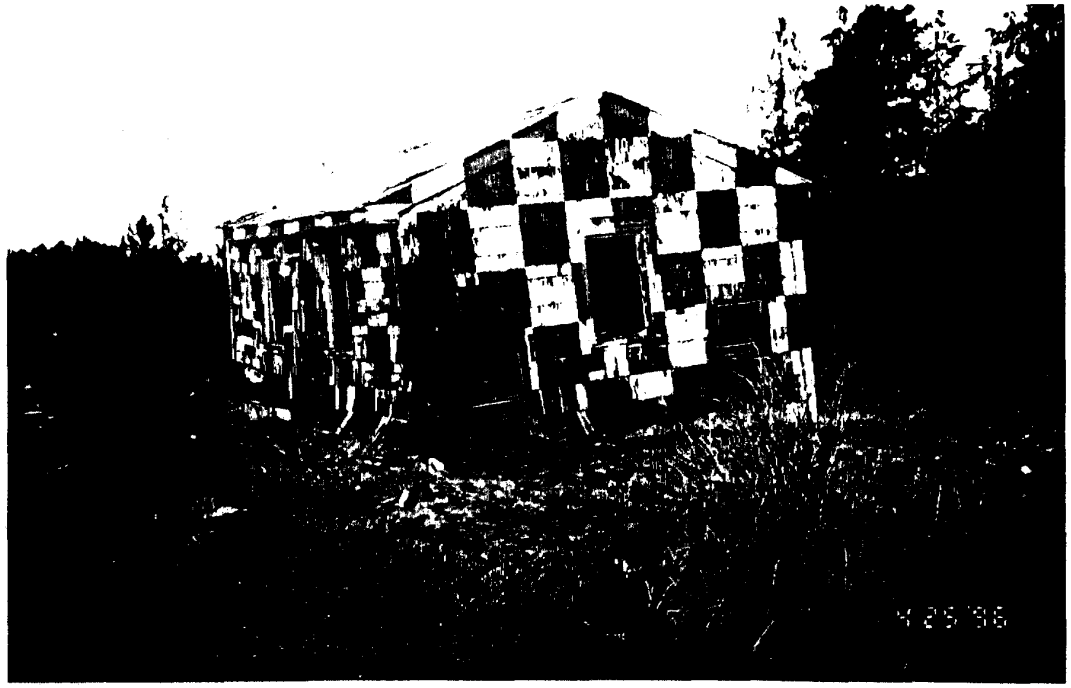
Photograph 74: USCG ASTs

Photograph 75: Hangar

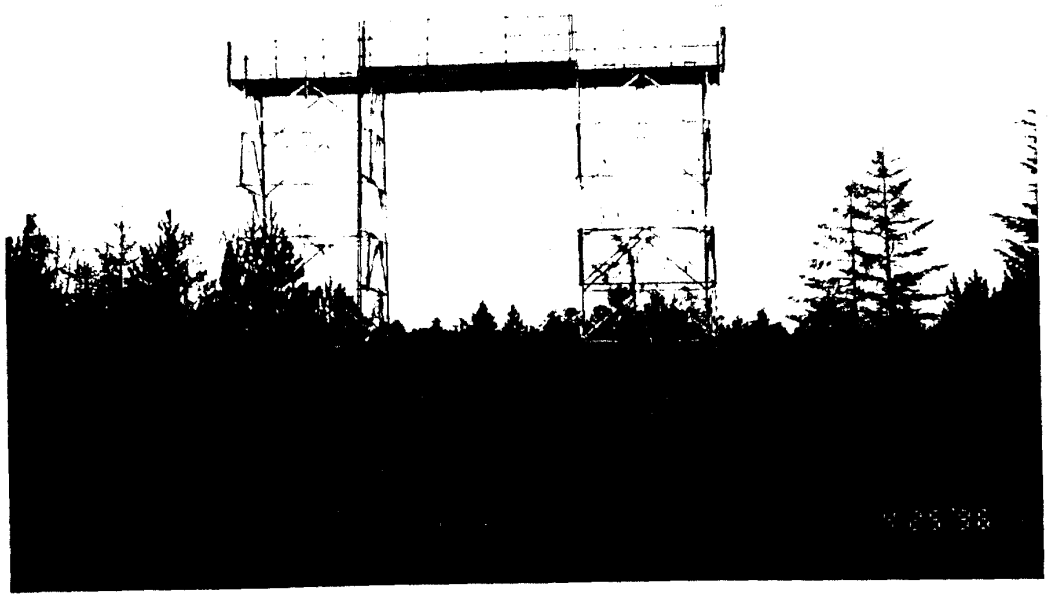
Photograph 77: PNA/WA Terminal

Photograph 78: Air Traffic Control Tower

Photograph 79: Log Storage Yard

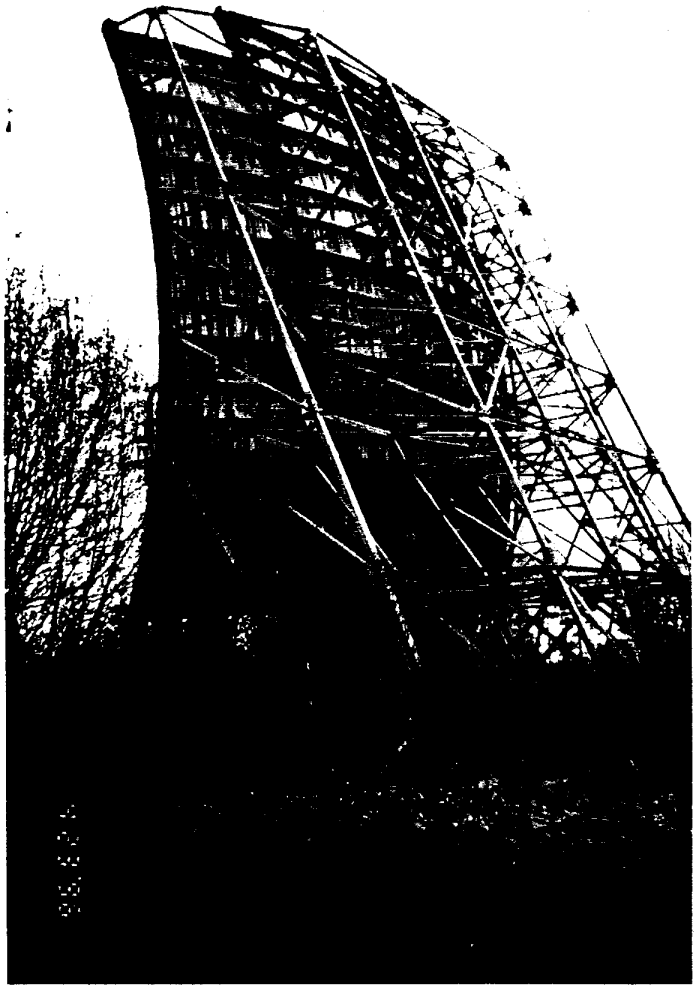


Photograph 80a: Localizer



Photograph 80b: Localizer

Photograph 83: Annette Inn Auxiliary Area



Photograph 85: Microwave Receiver Station